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REGIUS PROFESSOR OF PHYSIOLOGY IN THE UNIVERSITY OF ABERDEEN.

I have chosen as the subject of this year's Linacre lecture one in the study of which there has always been the closest collaboration between physician and experimentalist. Perhaps more than in any other disease have the problems arising in the clinical investigation of diabetes been helped towards solution by the discoveries of the laboratory, and the researches through which these have been made have, in many instances, been inspired and directed by what the physician has observed at the bedside.

To the physiologist the problem of the control of the metabolism of the carbohydrates has a further interest, since it seems to him that its solution must be the first step towards revealing the mechanism of metabolism in general. This mechanism is no doubt partly dependent upon the balance established at each stage among the various substances which are being constantly built up and broken down, in a state of dynamic equilibrium. But, whilst this is intelligible when we restrict our consideration to processes occurring in simple solution within a single cell, there remains to be explained how coördination is effected between these processes in different cells in widely separated organs, or even in different regions of the same cell. It is conceivable that in metabolism the rate of reaction at any of the intermediary stages is capable of being altered by something affecting either the activity of the enzyme that controls it or the solution pressure of the reacting substances. One or other of these may be influenced either through the nervous system or by hormones. The nervous system may alter the rate of change through its control over the intimacy of contact between enzyme and substrate, as by increasing or decreasing the permeability of the intracellular barriers which hold the two apart, and hormones may influence it either for the same reason or because of an activating or inhibiting influence on the enzyme itself.

Since most metabolic processes, especially those of protein and fat, appear to proceed at a steady rate, as evidenced by the constancy of the excretory products under basal conditions, it is unlikely that nervous control can play any significant rôle in their regulation. But there are certain processes of carbohydrate metabolism in which this method of control may be important, the most outstanding being the chemical changes which accompany muscular activity. When the glycogen of the muscles becomes used up in the production of lactic acid, the supply is replenished by glucose derived through the blood from the liver. Our first question in the control of carbohydrate metabolism is, therefore, how is this correlation between muscles and liver effected? When the muscles contract, do they set up through their sensory nerve-endings impulses which, acting by way of some nerve centre, stir up the liver to produce more sugar? Or is the process purely a chemical one in the sense that when the sugar of the blood becomes used up to meet the increased demands of the muscles for material out of which to replace their glycogen, the resulting hypoglycæmia stimulates sugar production in the liver, either by a direct action on its cells, or indirectly by influencing the secretion of some hormone which then has this effect? However mediated, the control between the requirements of the muscles for glucose and its production by the liver must be a finely balanced one, as is well illustrated both by the constancy of the blood-sugar level during moderate exercise and by the small extent to which the percentage of glycogen in the muscles may be decreased even after the exercise has been long continued (Hershey and Orr [1]).

The aim of the physiologist is essentially to resolve general questions such as these into specific problems capable of being investigated by experimental methods. If, as Pflüger [2] first suggested, the correlation between muscular activity and carbohydrate metabolism is of the nature of a nerve reflex, causing alterations in the rate of sugar production in the liver, then it should be possible to demonstrate the efferent nerve control of this process, and the actual problem first to be considered concerns the method to be used for ascertaining the rate of sugar production.

Significance of Changes in Blood-sugar Level.

The conditions met with in the phenomena involved in the regulation of the blood-sugar level are far more complex than those we have to deal with when studying the activity of some gland which discharges its secretion through a duct, since the sugar is added to the large volume of blood which circulates through the liver. Alteration in the rate of production of sugar can be detected only when it is sufficiently great to cause a measurable change in concentration, and even then it is not permissible to infer that this is the factor involved unless the possibility of a change in concentration through migration of sugar from the blood into the tissues has been ruled out. The percentage of sugar in the blood, in other words, is merely a balance between production and loss. If the rate of either of these is known to be constant, changes in the sugar concentration must reflect alterations in the speed of the remaining process. When muscular activity is at its lowest and is uniform, as indicated by constancy in the consumption of oxygen—the basal state—a change in the blood-sugar level would suggest an alteration in the rate of sugar production by the liver and, conversely, when the latter is constant, as is presumably the case after the absorption of food from the alimentary canal is completed—the post-absorptive state—changes in the level must be the reflection of variations in the rate of utilisation of sugar by the tissues. That this behaviour of the blood-sugar level is the most important index we have of the state of carbohydrate metabolism has been amply confirmed through practical experience. When in the basal state the level is found to be higher than its average, one or other of the processes of carbohydrate metabolism is certainly disturbed, and the onset of this disturbance may be revealed by observing the extent to which the level becomes raised by adding sugar to the blood directly, or by the alimentary tract.

* The Linacre lecture of St. John's College delivered at Cambridge on May 6th.

Puncture Diabetes.

Our problem, whether sugar production in the liver is under nerve control, thus narrows itself down to observing the behaviour of the blood-sugar curve following stimulation of the nerves and nerve centres which supply this organ. Let us in the first instance consider some of the results which have been obtained by such stimulation and later examine them in relationship to the other influences, such as those of a chemical (hormone) nature, which may exercise control over carbohydrate metabolism. In adopting this course, we are following historical precedent, since it was through the discovery, in 1849 by Claude Bernard, of puncture diabetes that the problem of the control of carbohydrate metabolism became susceptible to experimental investigation and, indeed, the whole field of experimental medicine was thrown open to the scientific explorer.

In his lectures on physiology delivered in 1855 [3] this master experimentalist demonstrated on a rabbit the now famous piqûre experiment. He pushed a specially designed instrument through the cranium in the region of the occipital tuberosity, and directed its course so that it punctured the cerebellum and the floor of the fourth ventricle where the latter overlies the pons (between the roots of the eighth and tenth nerves). At the end of the lecture, urine, pressed out from the bladder, strongly reduced Fehling's solution.

This discovery of Bernard's was not haphazard. By comparing the reducing power of samples of blood taken from the portal and hepatic veins, he had previously obtained evidence that the liver secretes sugar, and the vagus appeared to him a probable nerve path for control of this function. Electrical stimulation of the vagus was not followed by glycosuria but this negative result did not daunt Bernard, for Magendie had previously observed that puncturing the origin of the fifth pair of nerves might excite the secretion of tears and saliva although this did not occur after their section. Bernard therefore asked himself the question, what would happen to sugar secretion after puncture of the floor of the fourth ventricle at the place of origin of the vagi. On subjecting this to the test of experiment, he obtained the results which we have just described. But these did not prove that the diabetogenic impulses were transmitted by the vagi. On the contrary, Bernard found when the piqûre was performed after cutting these nerves that the hyperglycæmia and glycosuria were no less pronounced than usual. When, on the other hand, the spinal cord was cut above the origin of the sympathetic fibres, piqûre became ineffective, indicating, so Bernard thought, that the diabetogenic centre must act on the liver through an efferent sympathetic pathway.

It is now recognised that disturbances anywhere in the nervous system may be followed by changes in the blood-sugar level, even psychic states, such as emotion, fright, and fear, being not infrequently associated with hyperglycæmia and glycosuria. Most anæsthetics have this effect, and among those commonly used the least disturbance in the blood-sugar level occurs with amytal (isoamyl ethyl barbituric acid) and other compounds of barbituric acid (Page [4]), although similar virtues have been claimed for chloralose. On this account, many of the recent researches in the control of carbohydrate metabolism have been performed on animals under amytal, and the practice has seemed to be further justified by the insignificant influence of this anæsthetic on the percentage of glycogen in the muscles (Cori [5]) and of lactic acid in the blood, both of which undergo considerable changes when other anæsthetics are used. It has always seemed to me that these inhibiting properties of amytal are against, rather than in favour of its use in experiments on carbohydrate metabolism. That this criticism is a valid one will be evident from the experiments done with Donhoffer,[6] which I shall now describe.

In rabbits anæsthetised by intraperitoneal injections of amytal or luminal, we performed piqûre in the neighbourhood of the vagus nucleus, either by Bernard's method through the skull or by Eckhard's, in which, prior to making the puncture, the floor of the fourth ventricle is exposed by opening the occipito-atlantoid membrane. In neither case did any increase occur in the blood-sugar level. This result impressed us all the more since I had previously found that when piqûre was performed by Bernard's method under local anæsthesia, hyperglycæmia invariably followed.

In view of the evidence which has recently been obtained of the presence in the region of the hypothalamus of a centre controlling the activities of the sympathetic nervous system (Karplus and Kriedl,[7] Houssay and Mollinelli,[8] Beattie, Brow, and Long [9]) the possibility had to be considered that this might be the chief diabetogenic centre and that its stimulation by puncture would induce hyperglycæmia even during the anæsthesia induced by amytal and luminal, since we had found that this occurred after injections of adrenaline into rabbits thus anæsthetised. We assumed that if the adrenal glands respond by secreting excess of adrenaline when the hypothalamus is stimulated, as is believed to be the case, this type of anæsthesia should not prevent the development of hyperglycæmia. In a considerable number of rabbits taken at random from the hutches, the brain was freely exposed by trephining, usually after ligation of both carotid arteries, and lesions which varied in severity from mere punctures to complete transections were made at different levels, with the result that the percentage of blood-sugar sometimes increased but without any relationship to the exact position of the lesion. The irregularity of the results offered little hope of our being able to achieve any success in localising a diabetogenic centre by such methods, and this became still more evident when it was found that pronounced hyperglycæmia might supervene in unoperated anæsthetised animals. This was noted especially when luminal was the anæsthetic used, although amytal did not always leave the blood-sugar undisturbed, as has been observed also by Underhill and Sprunt.[10]

It was evident that some other method would have to be followed in localising the centre. In deciding what this should be we were assisted by two important pieces of information, one being that hyperglycæmia often supervenes upon decerebration, and the other, that the anæsthetic effects of amytal in the rabbit quickly pass off when this drug is injected intravenously. The plan was, therefore, to perform decerebration while the animal was under intravenous amytal anæsthesia, and then to observe the behaviour of the blood-sugar in the decerebrated preparation after time had been allowed for the effects of the amytal to pass off.† The level of decerebration was varied in different experiments

† Other anæsthetics, even though causing some hyperglycæmia, might also be used for the decerebration, an interval of time being then allowed to elapse for the blood-sugar to return to normal.

but hyperglycæmia occurred only when the pons was involved. Thus in 23 experiments on fasted rabbits the average blood-sugar rose to nearly 0·300 per cent. within four hours after decerebrating through the pons. On the other hand, when decerebration was at other levels the blood-sugar either remained unaltered or only rose slightly. These results are shown in Table I., in which position I.

TABLE I.—*Average Behaviour of Blood-sugar Percentage after Decerebration (decn.) at Various Levels.*

Position of decn.	Blood-sugar percentage.						Expts.
	Before.	Immediately after.	In 1 hr.	2 hrs.	3 hrs.	4 hrs.	
I.	0·102	0·127	0·139	0·145	0·155	0·174	10
II.	0·123	0·125	0·125	0·139	0·130	0·160	6
III.	0·110	0·155	0·195	0·241	0·286	0·291	23
IV.	0·109	0·137	0·123	0·135	0·131	0·126	10

includes those regions of the brain anterior to the tuber cinereum; position II. between the tuber and the upper border of the pons; position III. the pons; and position IV. the medulla.

The method of approach to the pons varied in different experiments, being sometimes through a trephine hole in the skull and sometimes through the occipito-atlantoid space, and from post-mortem examination of the brains we are inclined to believe that "the centre" is situated in the tegmentum of the pons. It is possible, as has been stated to be the case by Hiller,[11] that it is the vestibular nuclei or those having to do with muscle tone that are especially concerned. The view that the motor nucleus of the tenth nerve is the centre, as asserted by Brugsch, Diesel, and Lewy,[12] is in no way supported by our results. My colleague, Peterson, has recently confirmed them. He has found in cats under anæsthesia by ethyl chloride or nitrous oxide that the blood-sugar level is only moderately raised after decerebration in region II. In an hour or so it usually returns to the normal level but rises immediately and continues to rise if a second decerebration is performed in region III.

The question, whether the transection owes its diabetogenic effect to stimulation of a centre or to severance of some nerve pathway, is a difficult one to answer. The former view receives some support from the fact that a striking degree of hyperglycæmia often follows when the transection is considerably to one or other side, or is of limited width in the midline, a mere puncture being sometimes effective, at least in the rabbit. If severance of some pathway should prove to be responsible for the hyperglycæmia we will be compelled to conclude that impulses having a general hypoglycæmic effect (perhaps because they maintain a secretion of insulin) are constantly descending from some centre above the level of the transection. Such a centre would have to be within the pons or the adjacent regions of the cerebellum, since, as we have seen, transection immediately anterior to this region leaves the blood-sugar level unchanged. But inasmuch as section of the medulla in the rabbit is also without hyperglycæmic effect, it seems likely that mechanical stimulation rather than destruction of some centre in the pons is responsible for the hyperglycæmia.

Nature of Metabolic Disturbance Responsible for the Hyperglycæmia.

Provided with an experimental method by which hyperglycæmia could with certainty be induced, the question arose as to the nature of the metabolic disturbance responsible for it. In his earlier experiments on piqûre, performed before he discovered the presence of glycogen in the liver, Claude Bernard considered that the hyperglycæmia was due to excessive secretion by the liver of sugar derived from protein and fat. But this view was later replaced by one in which it was considered that the extra sugar arose from the glycogen existing in the liver at the time of performing the piqûre. The reasons for this change of view were that the glycosuria which developed when piqûre was performed on rabbits having small stores of hepatic glycogen, as a result of fasting, was less marked and of shorter duration than in well-fed ones, and that its disappearance in the latter seemed to coincide with depletion of the glycogen stores. It is probable, however, that subsidence of the irritation caused by the piqûre—perhaps through death of the nerve structures—was responsible for the disappearance of the glycosuria.

On repeating these experiments on fasting or well-fed rabbits, Donhoffer and I have found that the hyperglycæmia which follows pontine transection is as pronounced in animals having only traces of glycogen in the liver to start with as in those with large amounts. Thus, when we compare the average percentages of sugar in blood removed at hourly intervals after decerebration in a group of animals having less than 2 per cent. of liver glycogen with those in a group having over 2 per cent. the following are the results.

TABLE II.—*Average Blood-sugar Percentages at Hourly Intervals. Before and after Decerebration.*

Liver glycogen.	Normal.	Immediate.	1 hr.	2 hrs.	3 hrs.	4 hrs.	Expts.	Glycogen.
Below 2 p.c.	0·107	0·155	0·195	0·243	0·284	0·277	8	Under 1 p.c. in 4 cases.
Over 2 p.c.	0·109	0·149	0·165*	0·218	0·280*	0·287	6	Over 5 p.c. in 5 cases.

* Only 5 in average.

The hyperglycæmia is seen to have been practically of the same degree in the two groups, but the change in the glycogen percentage was very different, as will be seen by referring to Table IV.; a small reduction occurring in the fasted animals but a large one in those that were well fed. It is quite evident, in the fasted animals at least, that sugar production out of glycogen in the liver cannot account for the extra sugar in the blood, and indeed, in several of these animals, the glycogen percentage in this organ actually became increased following decerebration.

These observations show that the effects of decerebration cannot depend merely on increased production of sugar from the glycogen originally present in the liver.

What then causes the blood-sugar level to rise after decerebration? Only two possibilities remain, either (1) that the liver produces sugar from sources other than the glycogen originally present in it, or (2) that utilisation of sugar by the muscles and other tissues becomes suppressed.

It will be convenient at this stage to consider the

second of these possibilities: diminished utilisation of sugar by the muscles. As a first step in this utilisation sugar must pass from the blood plasma into the tissues, and it would appear that the rate of this migration is determined solely by the relative concentrations of sugar in blood plasma and tissue fluid. Observations on the rate of diffusion of sugar into muscle by comparisons of the percentages of free sugar in tissues and in blood plasma support this view (Cori, &c.[13]). Very shortly after entering the tissues the sugar disappears as such, being converted into glycogen and ultimately into lactic acid, although some may be directly oxidised, as evidenced by the rise in respiratory quotient which occurs in eviscerated animals when excess of sugar is present in the blood along with insulin. Other intermediary substances such as hexose phosphates are formed in this process, but the problem of their formation does not concern us now. What we wish to know is whether changes occur in the rate of utilisation of sugar in the tissues, and in the light of present knowledge we may form a rough estimate of this by measurement of changes in: (1) the respiratory exchange, (2) the glycogen content of the muscles, (3) their lactic acid production. Let me refer briefly to the results of measurements of these in rabbits decerebrated at various levels.

The Respiratory Exchange.

The problem was to find whether the consumption of O_2 and the respiratory quotient are affected by pontine decerebration in such a manner as to indicate, in comparison with their behaviour before decerebration, that there is diminished oxidation of carbohydrate. The Douglas bag method was employed, and the procedure finally adopted was to make two respiratory observations, an hour apart, after performing all the necessary operations except actually decerebrating. The average of these two results was then compared with the results obtained after decerebration, and it was found, in four out of six technically flawless experiments, that there was no significant change either in the O_2 consumption or the respiratory quotients (Table III.).

TABLE III.—*Average Consumption of O_2 and Average Respiratory Quotient before and after Pontine Decerebration.*

—	Before decerebration.		After decerebration.	
	O_2 c.cm. per kg. and hr.	R.Q.	O_2 c.cm. per kg. and hr.	R.Q.
1	420	0·73	482	0·75
2	278	0·87	373	0·82
3	291	0·78	287	0·89
4	397	0·91	347	0·91
5	390	0·95	382	0·94
6	404	0·83	423	0·86

From this we may conclude that diminished oxidation of carbohydrate in the muscles cannot be responsible for the accumulation of sugar in the blood. The results would at first sight also seem to contradict the view, which we will examine more fully later, that increased secretion of adrenaline is the immediate cause of the hyperglycæmia. But closer examination makes it doubtful if they are of significance in this connexion. For although adrenaline may have a calorigenic effect, the minimal rate at which it must be injected intravenously to cause it in the rabbit is 0·00025 mg. per kg. body-weight per minute, whereas one-fifth of this dose (0·00005 mg.) is capable of causing hyperglycæmia (cf. Cori [14]).

Glycogen Content of the Muscles.

I need not remind you that very great care must be taken in determining the glycogen content of mammalian muscle. Taking every known precaution, Donhoffer and I found that the glycogen content of the muscles of one leg removed before pontine decerebration was markedly greater than that of the muscles of the other leg removed several hours after it. Table IV., which also includes the changes in liver glycogen, will illustrate the results.

TABLE IV.—*Averages of Glycogen Percentages in Liver and Muscles before and four hours after Decerebration at Various Levels of Brain.*

—	State of animal.	Level of decn.	Liver.		Muscles.		Observations.
			Before	After	Before	After	
1	Fasting.	III.	0·93	0·68	0·32	0·23	11
2	Fed.	III.	6·41	2·90	0·67	0·50	6
3	Fasting.	I.	1·69	1·48	0·55	0·45	3
4	Fed and fasting.	II.	5·80	5·20	0·36	0·35	2
5	„ „	IV.	2·17	2·11	0·29	0·36	7
6	Amytal.	—	—	—	0·50	0·45	1

In No. 1 about 0·12 g. glucose per kg. and hr. set free from preformed glycogen; in No. 2, about 0·6 g. It requires 2·0 g. glucose per kg. and hr. injected intravenously to raise blood-sugar to 0·300 per cent.

In view of the effect of amytal alone we are probably safe in considering a change of ±0·05 in the percentage of muscle glycogen of no significance. When decerebration was anterior to the pons (positions I. and II.), although no increase in blood-sugar occurred, somewhat more glycogen disappeared from the muscles than after amytal alone, but it is possible that this was owing to the reflex movements which are common after decerebration at higher levels. When region IV., the medulla, was involved the muscle glycogen increased slightly but this is unusual, others having found that it remains unchanged in the spinal animal (Best, Dale, et al.[15]; Evans, Tsai, and Young [16]). In animals decerebrated at the pons, on the other hand, there was a decided reduction in the percentage of muscle glycogen, and this was especially marked in those animals in which the initial percentages were high because of previous feeding with carbohydrates.

This diminution in glycogen may to a certain extent have been due to retardation of its rate of formation out of blood-sugar, but the question also arises whether the portion which disappeared may not, by its addition as glucose to the blood, account for the hyperglycæmia. For although it is now well established that this muscle glycogen is not directly converted into glucose but into lactic acid, it is possible that the latter might become converted into sugar by being carried in the venous blood to the liver where such conversion is known to take place. It becomes of interest therefore to calculate whether sugar was mobilised from both the liver and the total musculature of the body in quantities sufficient

to account for the hyperglycæmia. Even when we select for this calculation the experiment on fasted animals which showed the most marked decrease in the percentage of glycogen, the glucose totals only 1·4 g., an amount which experiment has shown would not appreciably affect the blood-sugar level when injected in solution intravenously into a rabbit over a period of four hours.[6]

Blood Lactic Acid.

The percentage of lactic acid in the blood increases after pontine decerebration, although this does not occur to any significant extent after decerebration at other levels. Average results are shown in Table V.

TABLE V.—*Average Percentages of Sugar and of Lactic Acid in Blood removed four hours after Decerebration.*

Position of decerebration.	Blood-sugar per cent.	Lactic acid mg. per cent.	Expts. averaged.
I.	0·14	0·15	6
II.	0·14	0·39	2
III.	0·27	0·89	12
IV.	0·14	0·37	5

A similar increase in lactic acid also occurs, as Cori and Cori[17] have shown, when adrenaline is injected, but in this instance a closer parallelism was found to exist between the curves representing the changes in concentration of lactic acid and sugar than we found to be the case after decerebration.

Pontine decerebration, therefore, leads to an increase in lactic acid as well as in the sugar of the blood and to a diminution of the muscle glycogen, while the liver glycogen may either increase or decrease. In the normal fasting animal the liver must be regarded as a factory for glucose, using as its raw materials lactic acid, protein, and fat, and forming glycogen as a step in the process (gluconeogenesis), whereas the muscles act as a machine in which this glucose is condensed to glycogen which yields energy when it breaks down to lactic acid. What then causes the blood-sugar level to rise after decerebration? Is the excess of lactic acid primarily responsible for the increase in sugar, being converted into it by the liver; or is the accumulation of glucose in the arterial blood due to a disturbance in the process of its migration into the tissues? For although oxidation is not interfered with, the possibility remains that conversion of the glucose into muscle glycogen becomes retarded, so that diffusion from the blood is also retarded. This possibility receives support from the experiments of Cori and Cori[18] on adrenaline hyperglycæmia, with which the hyperglycæmia caused by decerebration has much in common. These workers show by measurement of the balances of free sugar and glycogen in the entire body and calculation of the carbohydrate combustion from the respiratory exchange, both in rats and rabbits, that over-production of sugar from the liver cannot account for the degree of hyperglycæmia which actually occurs, and they conclude that "the only possibility left is . . . that the animals injected with adrenaline are unable to utilise glucose at the same rate as normal uninjected animals."[14] In support of this interpretation it is pointed out that the difference in sugar concentration which normally exists in the blood as it enters and leaves the muscles becomes less marked or disappears altogether after adrenaline injection.

It might not require any considerable degree of suppression of glucose utilisation to raise the blood-sugar level, and it is possible that what really occurs, both in decerebration and adrenaline hyperglycæmia, is a slowing up in the rate at which the muscles form glycogen out of the blood-sugar. Glycogen disappearing from the muscle as lactic acid might in the liver be converted through glycogen into glucose, and as such be added to the circulating blood. A disturbance of this nature might not reveal itself by changes either in the respiratory metabolism of the muscles or in the glycogen content of the liver. Its only effect would be, as it were, to introduce a resistance into the migration of sugar from blood to tissues and so to raise the blood-sugar level and lower the glycogen level in the muscles.

I have already wandered far enough into the fields of speculation, but having gone so far I shall venture another step, by suggesting that the accumulation in the muscle of some substance intermediary between glucose and glycogen might be responsible for the possible delay in the migration of glucose from the blood. This would mean that we have to deal with something of the nature of a balanced reaction between the concentration of sugar in the blood and that of some carbohydrate derivative in the tissues.

Relationship Between Nervous Control and the Hormones.

ADRENALINE.

Having examined the nature of the disturbances in carbohydrate metabolism which are set up by decerebration, we are now led to compare them with those caused by the two hormones, adrenaline and insulin, which have effects which, in many ways, are mutually antagonistic. In almost every particular the changes in carbohydrate metabolism which are set up by adrenaline and by decerebration are strikingly alike. This suggests the possibility that the nerve impulses which decerebration engenders act primarily on the adrenal glands so as to cause an increased secretion of adrenaline into the blood. This suggestion is not new. It was put forward in 1906 by Mayer[19] with reference to piqûre, and it has led to innumerable researches dealing with the effect of adrenalectomy on the development of piqûre diabetes. Among more recent workers, Stewart and Rogoff,[20] have demonstrated that piqûre may still be effective in the absence of the adrenals. Other observers maintain that piqûre causes excessive amounts of adrenaline to be secreted into the blood. Evans, Tsai, and Young[16] have also shown that removal of the adrenals in cats has the effect not only of greatly diminishing the hyperglycæmia which follows decerebration but also of accelerating the rate at which glycogen reaccumulates in the liver after its disappearance due to the anæsthetic.

The foregoing evidence taken as a whole seems to show that although the adrenal glands must play some rôle in the development of piqûre hyperglycæmia, they are not essential to its occurrence. It is usually assumed that the impulses which excite the gland must reach it by the sympathetic (splanchnic) nerves and it is a fact, as Pearce and I found in the dog, that electrical stimulation of these nerves after adrenalectomy did not cause hyperglycæmia, as is the case in normal animals. On the other hand, hyperglycæmia occurred when the hepatic nerves were stimulated although, in this case, there could have been no excitement of the adrenal glands.

For reasons which I do not propose to detail here we came to the conclusion that when there is widespread stimulation of the sympathetic system, the nerve stimulus set up is reinforced in its effects by a concomitant secretion of adrenaline. It is possible that this also occurs after decerebration or piqûre.

Donhoffer and I have also studied the effect of pontine decerebration in animals from which the adrenals had been removed several days previously. Typical results are shown in Table VI. In four

TABLE VI.—*Influence of Adrenalectomy on the Effects of Pontine Decerebration.*

Two Typical Experiments.

Nutritional state of animal.	Immediately after decn.	Sugar (S) and lactic acid (A.) of blood (per cent.) in—				Glycogen* (per cent.).	
		1 hr.	2 hrs.	3 hrs.	4 hrs.	Before.	After.
Fed (routine).	S. 0·10 A. 0·04	0·11 0·04	0·13 0·04	0·12 0·05	0·11 0·10	M. 0·39 L. 2·02	0·40 0·15
Specially fed.	S. 0·12	0·13	0·14	0·17	0·20	M. 0·64 L. 4·90	0·41 0·61

* Glycogen (per cent.) in muscles (M.) and liver (L.) before and 4 hours after decerebration.

animals in which the liver glycogen was 2 per cent. or less the blood-sugar did not rise, and there was little change in the glycogen content of liver and muscles; but in one in which about 5 per cent. was present hyperglycæmia was decided and considerable quantities of glycogen disappeared. This is the most interesting of the results, and when taken in conjunction with those of Stewart and Rogoff would seem to justify the conclusion that the presence of the adrenals is not *essential* to the development of hyperglycæmia after decerebration or piqûre, or to the rapid glycogenolysis which it usually sets up, especially in the muscles. Further observations on glycogen-rich animals are necessary before this can be accepted as final. The results obtained however do show that the presence of the adrenals makes the animal much more sensitive to the effects of decerebration, and we must suppose that this is because adrenaline is secreted in excess at the same time that the hepatic nerves are stimulated.

Insulin.

Antagonistic to adrenaline is insulin; but there is a fundamental difference in the scope of action of the two hormones, that of insulin being apparently restricted to carbohydrate metabolism, whilst that of adrenaline is widespread, affecting every function controlled by the sympathetic nervous system. Insulin is essential to the maintenance of a normal blood-sugar level, and its absence from the body is incompatible with life. Adrenaline, on the other hand, may apparently be dispensed with, since in its absence, as in completely adrenalectomised animals kept alive by repeated injections of extracts of the adrenal cortex, the blood-sugar is at or only slightly below the normal level.‡

I need not here describe the physiological and therapeutic effects of insulin. What interests us at present is that the maintenance of the blood-sugar at a practically constant level, not only under basal conditions but also when the demands for carbohydrate by the muscles are greatly increased, as during exercise, indicates that the secretion of the isles of Langerhans must be very delicately adjusted to the requirements of the organism, and the question arises as to how the control is mediated. Do the cells of the islets adjust their discharge of insulin according to the concentration of glucose or one of its derivatives in the blood circulating through them, or are they acted on by some other hormone, the presence or the concentration of which is related to the sugar concentration, or is the adjustment mediated through the nervous system? This problem is occupying the attention of many workers at the present time, and experimental results have already been obtained which are considered to support the latter or neurogenic hypothesis. I cannot deal with these results further than to state that they are considered to indicate that increase in the blood-sugar concentration excites some centre in the brain which then discharges, through the vagus nerves, impulses increasing the secretion of insulin. Although the cross-circulation experiments of La Barre and his collaborators,[21] upon which this important conclusion depends seem to be convincing, it must be pointed out that the results await confirmation, especially by methods in which the concentration of insulin, instead of being inferred from the behaviour of the blood-sugar level, is actually measured in the blood coming from the pancreas.

But even if the secretion of insulin is controlled by the vagus nerve it does not seem likely that this can be the only means by which the nervous system exercises control over carbohydrate metabolism, for it is impossible to accept the view that decerebration hyperglycæmia could be due to a sudden cessation in this secretion. When the secretion stops, as a result of pancreatectomy, for example, it is not until some hours have elapsed that the blood-sugar rises to levels comparable with those reached after decerebration, and it is scarcely likely that this operation could lead to the discharge of impulses causing complete inhibition of the insular secretion. It is true that Clark[22] has brought forward evidence showing that the assimilation curve following the intravenous administration of glucose may be depressed in vagotomised rabbits. This would seem to indicate that inhibitory impulses are transmitted by the vagi, but even if the discharge of these should be so violently stimulated by decerebration as to bring about entire cessation of the secretion of insulin, it would presumably take some time before the hyperglycæmic effects would show themselves.

Taking the available evidence as a whole, increased secretion of adrenaline would appear to play a more important rôle in causing the hyperglycæmia and the other changes in carbohydrate metabolism which follow decerebration than would a sudden suppression in the secretion of insulin. It is now well established that much smaller concentrations of adrenaline are required to raise the blood-sugar level than to raise the blood pressure or the basal metabolism, and when we remember that sugar production by the liver is also under direct nerve control, it is quite likely that the impulses set up by decerebration act in part on the liver and in part on the adrenal secretion. It is possible, of course, that the combined effects of these two changes are amplified by a diminution in the internal secretion of insulin, although for this we have at present no evidence.

These considerations lead us to inquire whether the balance existing between the effects of these two mutually antagonistic hormones, adrenaline and insulin, may be what primarily determines the state of carbohydrate metabolism in the normal animal,

‡ It is possible, however, that these cortical extracts always contain traces of adrenaline.

the rôle of the nervous system being mainly concerned with the immediate and rapid changes in the supply of sugar by the liver required during muscular activity.

A continued preponderance in the concentration of adrenaline has been suggested as the fundamental cause of the diabetic state. In discussing this problem some years ago, I was inclined to accept the view, advanced especially by Stewart and Rogoff,[22] that this explanation is untenable, but if we reconsider it on the assumption that it might require only a slight preponderance of adrenaline over insulin, acting continuously, as would be the case when the secretion of insulin is curtailed, I am by no means so certain that it can be summarily dismissed.

The recent discovery of methods by which the fatal effects of adrenalectomy may be counteracted by injection of extract of the adrenal cortex may open up the opportunity of subjecting this problem to the test of direct experiment. We are as yet far from understanding the underlying cause of diabetes, for although all the known facts regarding this disease conform with the definition that it is one in which there is a certain degree of deficiency of insulin in the organism, we are still left with the problem of accounting for the over-production of sugar and the other metabolic disturbances which characterise it.

Effect on Nervous Hyperglycæmia of Interference with the Efferent Pathway by Section and by Drugs.

We have seen that there are several ways by which the nervous system might bring about a rise in blood-sugar, and it may be of advantage to recapitulate those we have so far considered. They are:

1. Stimulation through the hepatic nerves of the breakdown of glycogen already present in the liver or of the process of gluconeogenesis in this organ.
2. Stimulation of the internal secretion of adrenaline.
3. Inhibition of the internal secretion of insulin.

Stimulation through the hepatic nerves leaves out of account any effect on the breakdown of glycogen in the muscles, so that, at best, it could only partly explain the changes which accompany decerebration hyperglycæmia, but if, at the same time, either or both of the humoral effects come into play all the observed changes would be satisfactorily accounted for. The actual amount of adrenaline secreted need not necessarily be large if it is accompanied by a simultaneous cessation in the secretion of insulin. The possibilities which these considerations suggest may be put to the test of experiment by blocking, either by section or by drugs, the nervous pathways along which the impulses that control the various functions must travel.

According to present-day knowledge, the most likely efferent nerve pathways are the sympathetic (splanchnic) to the adrenal glands and liver, and the parasympathetic (vagus) to the islands of Langerhans. The possibility also exists that the stimulus which sets up glycogenolysis in the muscles is carried by somatic autonomic nerves, the only other alternative being that the activity of this process is solely dependent upon the presence of hormones. These considerations suggest various experiments, which Donhoffer and I have tried. We found, after section of the vagi in the neck, in fasting rabbits, that decerebration did not cause the usual degree of hyperglycæmia. Thus the blood-sugar rose only to 0·156 per cent. in two hours in one such animal, and to 0·226 per cent. in four hours in another. Assuming this effect of vagotomy to be owing to severance of the parasympathetic pathway to the liver, we next tried the effect of more complete blockage by combining vagotomy with the injection of atropine (1·0 mg. followed at intervals by 0·5 mg.). In five out of six experiments of this type the blood-sugar in three or four hours after decerebration did not rise to anything like the extent usually observed, but in the remaining animal the rise was very pronounced. I mention this detail because it so happened that this was the only animal of the series in which the glycogen content of the liver was determined, nearly 4 per cent. being found. This is a high percentage for an animal that has been fasted over night, and the result suggested the possibility that the hyperglycæmia had failed to develop in the other animals because only small amounts of liver glycogen were present. In a further series of five experiments, partly on fasted and partly on richly fed rabbits, glycogen was accordingly determined, both in liver and muscles, at the beginning and end of the experiments. The results are seen in Table VII.

TABLE VII.—*Influence of Vagotomy and Atropine on Behaviour of Percentages of Blood-sugar and Glycogen of Muscles (M.) and Liver (L.) following Pontine Decerebration.*

Typical Experiments.

Normal.	Immediately after decn.	Blood-sugar per cent. in—				Glycogen per cent.	
		1 hr.	2 hrs.	3 hrs.	4 hrs.	Before.	After.
0·10	0·14	0·13	0·10	0·08	—	L. 0·45 M. 0·48	0·20 0·34
0·10	0·10	0·09	0·10	0·09	0·09	L. 0·19 M. 0·07	0·16 0·06
0·11	0·14	0·13	0·13	0·13	0·18	L. 2·53 M. 0·41	0·80 0·40
0·11	0·21	0·26	0·29	0·41	0·49	L. 12·20 M. 0·50	7·17 0·40
0·09	0·16	0·19	0·39	0·47	—	L. 16·40 M. 1·45	9·70 1·29
Averages for 10 experiments on ordinarily fed rabbits.							
0·11	0·12	0·13	0·13	0·15(8)	0·17(6)	—*	—*

* Glycogen unknown.

We may explain these results by assuming that when the liver contains only the glycogen which is left over as a by-product of gluconeogenesis, severance of the parasympathetic pathway renders decerebration ineffective in exciting an increased sugar discharge, but does not do so when the organ is heavily loaded with glycogen formed and stored up in it from absorbed carbohydrate. The behaviour of the muscle glycogen was much the same in the two groups of animals, and may therefore for the moment be left out of consideration. What the results do seem to indicate is that, in a physiological sense, two kinds of glycogen may occur in the liver, the one associated with the process of gluconeogenesis—perhaps as a sort of by-product—which is under parasympathetic nerve control, and the other merely a storage form for glucose into which it may be reconverted through other influences.

In view of the effect of ergotamine in blocking the motor myoneural junctions of the sympathetic, its effect on decerebration hyperglycæmia was studied, with the hope that it might prevent breakdown of the storage form of glycogen, but this is not the case. It seems to act much like atropine. Thus, in two experiments on fasted rabbits with only traces of liver glycogen, the injection of 0·5 mg. of ergotamine just prior to

decerebration prevented the usual rise in blood-sugar.

When both atropine and ergotamine were given and the vagi cut as well, pontine decerebration had no effect on the blood-sugar level unless when large amounts of storage glycogen were present in the liver (Table VIII.). In an experiment, for example, on an animal in which the liver contained 7·9 per

TABLE VIII.—*Influence of Ergotamine, and of this plus Atropine, on Blood-sugar and Glycogen Percentages following Pontine Decerebration.*

Nutritional state of animal.	Drugs used.	Normal.	Immediately after decn.	Blood-sugar per cent. in— 1 hr.	2 hrs.	3 hrs.	Glycogen per cent. Before.	After.
Fasting.	Ergot.	0·09	—	0·09	0·10	0·10	L. 1·00 M. 0·67	0·45 0·39
Fed sugar.	Ergot. + vagotomy	0·10	0·14	0·13	0·24	0·48	L. 10·50 M. 1·12	6·65 0·90
„	Ergot. + atropine.	0·10	0·15	0·09	0·17	0·17	L. 6·9 M. 0·7	2·67 0·65
				Influence of amytal.				
Fed.	Amytal repeatedly.	0·11	0·10	0·15	*a*0·18	*a*0·16 4 hrs. 0·16	L. 10·46 M. 1·27	11·78 0·67

a = Amytal injected.

cent. glycogen and the muscles 1·13 per cent., the blood-sugar rose to 0·485 per cent. three hours following decerebration, and there were marked losses in glycogen in both tissues. To account for the hyperglycæmia under these conditions we must assume either that hypersecretion of adrenaline has occurred as a result of stimulation through some nerve pathway which neither atropine nor ergotamine can effect, or that the glycogenolysis is set up by the vascular disturbance which, to judge from the congestion of the abdominal blood-vessels, constantly follows piqûre or decerebration.

I have laid before you these perplexing facts in order to indicate that we do not consider that demonstration of the relationship of the vagus to decerebration hyperglycæmia does any more than reopen the problem of the nerve control of carbohydrate metabolism. The one thing that is established is that blockage of the parasympathetic pathway prevents hyperglycæmia from developing when traces only of glycogen are present in the liver.

Action of Amytal and Other Barbituric Acid Derivatives.

There remain two other experimental findings to which I should like in concluding to call attention. The one is that amytal has exactly the same influence on decerebration hyperglycæmia as atropine, the hyperglycæmia being inhibited in fasted rabbits by its injection. Hence the confusion in the results of our earlier experiments in which amytal and luminal were the anæsthetics used. This effect is not surprising when we recall that, in animals under amytal, stimulation of the vagus fails to cause cardiac inhibition, and it may be added that stimulation of the chorda tympani causes much less than the usual secretion of saliva from the submaxillary gland. The drug evidently has a paralysing effect on the parasympathetic nervous system.

The other interesting fact is that atropine and ergotamine greatly diminish or entirely prevent the rise in the blood-sugar level which ordinarily follows the ingestion of sugar. This effect is not seen when the sugar is given intravenously, which suggests that it is possibly caused by an interference with absorption. This explanation is, however, not accepted by those who have studied the problem (Allard,[24] Pollak[25]). Although I can offer no explanation of the phenomenon, it is unquestionably of some significance that the drugs should have similar effects on both decerebration and alimentary hyperglycæmia.

But here I must stop, leaving unanswered the question with which we started, concerning the coördination between the requirements of the muscles for sugar and its rate of supply by the liver. From the evidence at present available it may be justifiable to postulate that when the requirements are more or less steady, the rate of sugar production is regulated by alterations in the balance between insulin and adrenaline in the blood, but when there is a sudden call for sugar to meet the demands of great muscular activity direct nervous stimulation of sugar secretion by the liver is set up. As to how the balance between insulin and adrenaline is adjusted, it is possible since the secretion of each of these hormones is subject to nerve control, that the sugar concentration of the blood supplying the nerve centres is the stimulus which acts on them. In the light of the experiments which I have described, these centres are probably situated somewhere in the pons, and the discharge of impulses from them, which is set up by decerebration, acts in such a way as to cause increase in the secretion of adrenaline and decrease in that of insulin, at the same time that glucose secretory impulses are discharged to the liver.

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SHEFFIELD ROYAL HOSPITAL.—It is announced that £25,000 is to be given to this hospital by miners' welfare committees in South Yorkshire for the equipment of a new X ray department. A centenary appeal for £100,000 was recently launched by the hospital to meet an overdraft of £60,000 at the bank and to carry out improvements urgently required.

INJECTION OF THE UMBILICAL VEIN IN RETAINED PLACENTA.

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Many of the dangerous complications of pregnancy and the first two stages of labour can now be foreseen, and due provision can be made for them. But the medical attendant is still unable to foretell what will occur during the third stage.

Retention (either partial or complete) of the placenta is a common cause of post-partum hæmorrhage and strongly predisposes to puerperal infection. Such retention necessitates in the first instance a Credé's manœuvre with its associated shock; should this fail the surgeon is compelled to undertake manual removal, a procedure performed outside the protecting lining of the fœtal membranes and not completed without further serious hæmorrhage.

The term "retained placenta" implies that the placenta is lying unattached in the cavity of the uterus and that its expulsion has not been effected because of some abnormality; this abnormality may be either atony of the uterus following a prolonged labour or hour-glass contraction or pressure of a full bladder. On the other hand the placenta may remain adherent, either partially or completely, without showing any pathological cause. Totally adherent placenta is in fact much rarer than is usually believed: this group includes placenta accreta and increta, neither of which concern us in the present discussion, since they do not give rise to alarming hæmorrhage or demand specialised treatment.

It is convenient at this stage to summarise the procedure adopted in the Leeds Maternity Hospital for the conduct of the third stage of labour. Immediately after the delivery of the child the patient is turned on her back and the cord is placed in a sterile dish between her thighs. The height of the fundus is noticed but the uterus is not touched unless undue loss of blood necessitates the use of gentle massage to induce a contraction. In most cases the patient is left undisturbed for twenty minutes, except that the height of the fundus is observed from time to time, also the presence of hæmorrhage. In normal cases the simple tests for the position of the placenta are made (lengthening or shortening of the cord, the height of the fundus, shape, contour, and mobility of the body of the uterus). If such tests reveal that the placenta is lying in the lower segment or vaginal vault, the fundus is massaged to elicit a contraction and the uterus is then used as a piston to push the placenta out of the vagina. If the tests show that the placenta has not left the uterus they are repeated at intervals of five minutes. No alarm need be felt if the placenta is retained without hæmorrhage, but should the placenta be retained and a post-partum hæmorrhage occur this will continue until the placenta is removed and the uterus made to contract evenly; in these cases the accoucheur's hand is forced and he is compelled to aid the delivery of the placenta.

MANUAL REMOVAL AND ITS DANGERS.

It was formerly the custom to attempt to express the placenta by means of Credé's manœuvre, and should this be unsuccessful to repeat the manœuvre at intervals and under an anæsthetic if necessary before resorting to the dangerous manipulation of manual removal. It must not be thought that Credé's manœuvre itself is not dangerous; the shock induced by severe compression of the uterus through the abdominal wall may result in the collapse of the patient, especially if she has lost much blood and has been sent to hospital from a considerable distance. There is in addition the possibility of tearing the placenta resulting in one or more cotyledons being left in situ.

Manual removal of the placenta is usually an easy operation because of the undoubted fact that placentæ remaining in the uterus are as a rule partially or totally separated from the uterine wall; but statistics show that the accompanying morbidity- and mortality-rates are extremely high. Thus Bourne [1] gives the figure for morbidity at 35 per cent., and Goethals [2] at 39·4 per cent. The death-rate varies from 7 per cent. to 10 per cent. according to different observers, hæmorrhage seeming to account for rather more than half the fatalities. Goethals mentions in his paper the records of the Boston Lying-in-Hospital, which show that manual removal was effected 170 times in 8182 cases with a death-rate of 8·2 per cent., brought down to 1·76 per cent. by missing out all the complicated cases. One in every four cases of removal showed signs of uterine infection according to the B.M.A. standard. The figures of Queen Charlotte's Hospital from 1906–1916 (omitting 1909, 1910, 1911, and 1915) show that the placenta was removed manually 154 times; 54 patients developed sapræmia (i.e., 35 per cent. became morbid) and there were five fatal cases, giving a mortality of 3·2 per cent.

During the last five years at the Leeds Maternity Hospital, the placenta has been removed on 87 occasions; 28 of the cases became morbid and 14 proved fatal. Two patients died before the placenta was delivered. This gives a morbidity-rate of 32·7 per cent. and death-rate of 16 per cent. It must be mentioned that these figures include a large number of emergencies, some of the patients being extremely ill on admission.

The dangers encountered are: (1) infection by micro-organisms, (2) hæmorrhage during and after the operation, (3) shock during the extraction, and (4) rupture of the uterus. The factors playing a part in the causation of sepsis are: (1) the introduction of micro-organisms, and (2) the resistance of the patient.

As previously mentioned, removal of the placenta with the membranes necessitates the introduction of the hand outside the membranes. That means the fingers come in contact with the raw placental site, where there are large open venous sinuses, likened by Bethel Solomons to incubator tubes awaiting inoculation. The micro-organisms may be carried in from outside or may be present already in the cervix and vagina. The resistance of the patient varies according to her general condition, and it is obvious that patients who have bled considerably or who have borne a long and tedious delivery probably terminated instrumentally are handicapped from the start.

The difficulty is to know how long to wait before embarking on manual removal. Goethals suggests that one should wait one hour and then try all other methods first. H. Germans [2] advises waiting from two hours onwards. In cases without hæmorrhage Polak [3] is content to leave the placenta in situ; in those with hæmorrhage he packs the uterus and the placenta with iodoform gauze which stops the

hæmorrhage and eventually causes separation. It seems obvious to us that the time factor can only be taken into account in those cases without hæmorrhage, for when post-partum bleeding takes place during the third stage the indication for interference is rather the condition of the patient than the interval of time.

At this point it is interesting to mention a series of cases collected by Dr. Henry Bailey, of Horsforth (near Leeds). This consists of 23 instances of retention of the placenta, only one of which was associated with any severe degree of hæmorrhage. In all it was found impossible to obtain delivery of the placenta by manipulations short of a "Credé" under anæsthesia and so the patient was left with the placenta in situ. The placenta was delivered spontaneously after periods varying from five hours to six and a half days. Only one case showed signs of fever and that was one in which a forceps delivery had occurred with a perineal tear. These cases do not seem to agree with the findings of Hammerschlag, who says that after 24 hours the uterus becomes invaded with bacteria. However, by far the greater number of cases of retention are associated with hæmorrhage. In the previous paragraph I have recorded the statistics of manual removal and with these eloquent figures in mind we have during the past year been attempting to find some other less dangerous method of effecting the delivery of the placenta, and this we think we have found in a reconstruction of the Mojon-Gabaston treatment of injection of the umbilical vein.

MOJON-GABASTON TREATMENT.

My attention was drawn by Prof. A. M. Claye to a paper by Jarcho [3] where there is a history of the method and a description of three cases successfully treated by him. The history is briefly as follows.

Mojon in 1826 injected acidulated water into the umbilical vein and induced separation with subsequent delivery of the placenta. The result he thought to be due to (1) the sudden increase of pressure at the placental site, (2) cold transmitted to the placental site. Legros in 1828 found the method particularly efficacious in atonic bleeding. Basedow in 1829 tried the method several times and found it useless. Most in 1834 injected both veins in a case of twins. He said that the cold caused a cessation of bleeding and subsequent contraction of the uterus. Schwarz in 1835 reported good results not only in retention, but also in uterine hæmorrhage following partial separation. The method however fell into disuse because of the complete lack of aseptic precautions.

Koerting [4] reviewed the treatment in 1925, and came to the conclusion that injection of the vein makes a "Credé" unnecessary. He thinks that a previous "Credé" lessens the efficacy of the injection, but that after injection, removal by an easy "Credé" is usually successful. On the other hand he holds that in cases of profuse hæmorrhage injection is contra-indicated. This view was also expressed by Goethals, and if correct greatly lessens the value of the operation.

The technique as described by Jarcho is this. First one makes sure that the placenta is still in the uterus by using the simple tests, supplemented if necessary by a rectal examination. The requirements consist of a Record syringe, a large needle, and 200–300 c.cm. of sterile saline. The cord is thoroughly cleansed for about 8 inches near the vulva. This part of the cord is used because it is least likely to be soiled by fæces, and most likely to contain a patent umbilical vein. The saline is then slowly injected and the physician waits for the onset of uterine contractions and delivery of the placenta. This, in the three reported cases took place in 10–40 minutes.

In the summary at the end of the paper, Jarcho says: (1) The solution distends the placenta, ruptures the small veins, and forms a retroplacental hydroma, which by its mechanical action causes separation and expulsion of the placenta. (2) The method is simple. (3) No anæsthetic is needed. (4) No infection is carried to the uterus. (5) If delivery of the placenta is unsuccessful, injection makes a subsequent manual removal easy.

TEST OF THE METHOD.

The procedure used in this hospital has followed mainly that described by Jarcho; in the first few cases we used a large Record syringe, and injected the fluid slowly; the patient's pulse and blood pressure were noted before, during, and after the injection and were found not to alter. If, as Jarcho suggested, the separation of the placenta was caused by the tearing of the small veins, we thought that if the saline was injected faster there would be more likelihood of this occurring, and so the Record syringe was supplanted by Scannel's apparatus, and a large No. 20 needle introduced, such as is used for subcutaneous infusions.

Scannel's blood transfusion apparatus consists of a 20 c.cm. syringe with a three-way tap and thus overcomes the delay made necessary by the repeated disconnexion of the ordinary Record syringe. The patient is placed comfortably in bed with the lower part of the abdomen and thighs exposed, the thighs at the same time being abducted, the vulva and the surrounding skin and the cord are thoroughly cleansed with soap and biniodide spirit, and the cord placed on a sterile towel lying between the patient's legs. The needle is inserted into the umbilical vein about 6 inches from the vulva, and held in position by a ligature.

It is better to leave some undamaged cord between the needle and the vulva in case it is necessary to reinsert the needle. The injection of the saline is now commenced and it has been our aim to inject at the rate of 300 to 400 c.cm. in two and a half minutes. We have found that 350 c.cm. is about the average amount of fluid used. On completion of the injection an artery forceps is placed on the cord, the needle is removed, and the placenta is expressed if it has not been already spontaneously delivered. As the fluid enters the placenta the fundus of the uterus is felt to rise up in the abdomen and later strong uterine contractions occur. We have not deemed it necessary to await the spontaneous expulsion of the placenta but rather to aid its delivery by immediate expression, during a contraction, after the completion of the injection.

With the intention of testing the method thoroughly, most of the cases treated, and to be described, were submitted to the orthodox procedures in vogue for retention of the placenta. By this we mean that attempts at expression were made by means of a "Credé" first without, and later with an anæsthetic; and furthermore usually by more than one separate operator before injection was proceeded with. This means that the cases we have collected would all have terminated in manual removal had injection failed. What is more, according to Koerting we were deliberately jeopardising our chances of success by attempting removal by means of a "Credé" before injection.

Case Records.

CASE 1.—Aged 37. Fifth pregnancy. Previous obstetrical history: (1) 3-months' abortion. (2) Normal full-time; forceps. Child stillborn (December, 1927); manual removal. (3) 3-months' abortion. (4) Normal full-time; forceps; child stillborn (August, 1930); manual removal. The Wassermann reaction had been investigated on two occasions and found to be negative.

Present pregnancy.—A living child was born naturally, premature by six weeks. The patient oozed continuously and one hour and twenty-five minutes later the placenta was still in situ. The blood pressure was 80 systolic and 50 diastolic. An attempt at "Credé" failed, and as the bleeding had momentarily ceased, two pints of gum saline were given, resulting in a marked increase in the blood pressure 128/60. 250 c.cm. of saline were injected by means of a Record syringe into the umbilical vein in an attempt to separate the placenta. The time for injection was 11½ minutes. There was no success, the fluid seemed to run back again alongside the cord. An anæsthetic was commenced and preparations made for manual removal. As a "Credé" under the anæsthetic proved useless, the placenta was finally removed manually.

This was a difficult operation, the placenta seemed to be firmly adherent to the uterine wall and had to be scraped away. It was pale, thin, and fibrous. On looking up the old notes it was found that a similar state of affairs had occurred in 1930. The patient was later given 20 oz. of citrated blood, and made an uneventful recovery.

This case is interesting in that it was the first of our series and our only failure. Her previous obstetrical history shows that she had had two abortions and two full-time difficult deliveries followed by manual removal; in neither of which had there been any suggestion of infection. The placenta was firmly adherent and in view of the later findings totally unsuited for removal by injection. The saline was injected very slowly, and was possibly given time to leak gradually away without distending the placenta.

CASE 2.—Mrs. B., aged 30. Eighth pregnancy. Previous history: (1) and (2) Full-term. (3) Full-term; retained placenta; manual removal. (4), (5), and (6) Full-term. (7) Full-term; retained placenta; manual removal.

This patient was admitted in a precarious condition two hours after delivery of the baby. She was a heavy woman with œdema of the lower half of the body, solid albumin in the urine, and chronic mitral disease. The history was that she had lost continuously since the birth of the baby, and that abortive attempts at Credé's expression had been made. Her pulse-rate on admission was 104, B.P. 70/?, she was cold, clammy, and gasping for air. The placenta was firmly fixed in the uterus near the fundus. The shock was treated with salines, morphia, and radiant heat; a blood donor being sent for. An attempt at a "Credé" without anæsthesia was unsuccessful.

300 c.cm. of saline were injected into the umbilical vein as rapidly as could be given, the fundus of the uterus rose in the abdomen, contractions were elicited, and the placenta was delivered into the vagina, and later pushed out into a dish. The hæmorrhage ceased and the uterus contracted well. Preparations were made for a transfusion, and this was about to be given 2½ hours later, when the patient suddenly collapsed and died. Post-mortem examination showed advanced myocardial degeneration. This is the only death in the series.

CASE 3.—Aged 25. First pregnancy. This patient was delivered normally and continued to bleed slowly for 50 minutes, loss 1200 c.cm. An attempt at a "Credé" was unsuccessful. Preparations were then made for a manual removal and the patient anæsthetised. "Credé" was attempted under the anæsthetic but without success. 300 c.cm. of saline were injected into the umbilical vein. The uterus could be felt enlarging and contracting, the placenta being expelled with ease.

CASE 4.—Aged 26. First pregnancy. Patient delivered normally but lost continuously all the time, so the fundus was controlled. As the bleeding continued, attempts were made to express the placenta using much force with both hands. The bleeding had by now amounted to 900 c.cm. in 20 minutes. 300 c.cm. of saline were injected, the time taken being two minutes. The uterus could be felt to be distending as the fluid ran in. An immediate attempt at expression had the desired result. The placenta was greyish-white in colour. There were no cotyledons. There were three hard white fibrous nodules 1 in. × 2 in., and at the edge was a band of fibrous tissue ¼ in. thick.

CASE 5.—Aged 31. First pregnancy. Patient sent in as an emergency three hours after delivery with the placenta in utero following forceps extraction, with a complete perineal tear. The history of the pregnancy suggested placenta prævia. She had bled on three occasions, the last loss being profuse and occurring the day before delivery. On admission she was extremely collapsed, blanched, restless, almost pulseless, skin cold and clammy. Pulse-rate 164. Blood pressure 85/? No hæmorrhage per vaginam.

—	Blood pressure.	Pulse-rate.	—
On admission	85	Almost pulseless.	9 A.M.
After 1 pint saline ..	—	164	9.30–10 A.M.
	84	140	11 A.M.
After 1 pint blood ..	114–120	144–110	12 noon.

An examination was made per rectum. The vagina appeared to be empty except for what was thought to be placental tissue lying near the cervix. Abdominal tests showed the placenta to be mainly in the uterus. Only half an inch of the cord was available, the bulk having been torn off in attempts to obtain delivery. Mild attempts to press the placenta out of the uterus failed, and caused such extreme distress in her precarious condition that they were not persisted with. At 12.25 P.M. 300 c.cm. of saline were infused into the umbilical vein, the time taken being 2½ minutes. The placenta was expressed with ease. Even with this mild operation the patient collapsed again.

—	Blood pressure.	Pulse.	—
5 oz. blood*	80	150	—
15 oz. gum saline* ..	118	116	1.30 P.M.
	110	140	4 P.M.
	110	140	6 P.M.
	110	138	8 P.M.

*As the veins were so collapsed it was found necessary to make an incision to locate one.

The placenta was large, one edge had drawn down in a long lip possibly by the head, and presumably this was the part felt in the vagina and the cause of the ante-partum hæmorrhage. The patient made an uneventful recovery.

CASE 6.—Aged 20. Second pregnancy. Patient admitted before delivery following two abortive attempts at forceps delivery. Her condition was fair, except for an acute post-anæsthetic bronchitis. She had a small round pelvis and was having strong pains, the fœtus was dead. Perforation and craniotomy were undertaken under spinal anæsthesia, the perineum being torn; without any further delay the umbilical vein was injected, 300 c.cm. of saline being used, the placenta obtained and a perineal repair subsequently undertaken.

Although there was no suggestion of retained placenta in this case, it shows two valuable uses of the treatment.

(1) If the patient has bled before delivery, or has undergone difficult instrumentation, so that further loss of blood would make her condition dangerous, the accoucheur has a means at his disposal of obtaining the placenta at once. This has been undertaken with success on four occasions.

(2) In cases of severe lacerations of the vagina, which, if sutured whilst the placenta is still in utero and are liable to break down again during its delivery, the placenta may be obtained at once and the danger overcome; also the field of vision is not obscured by escaping blood lost during the normal separation of the placenta.

CASE 7.—Aged 32. Fourth pregnancy. Admitted as an impacted labour. Small pelvis, large child weighing over 11 pounds. No fœtal heart heard. The later weeks of the pregnancy had been complicated by pyelitis with associated rigors. She had been three days in labour and the vaginal discharge was very offensive. Delivery was effected after perforation and craniotomy with a bilateral cleidotomy. At the end of 30 minutes the placenta was still in utero, there had been a continuous loss of blood, the blood pressure had fallen to 90/60. Attempts at a "Credé" were undertaken, the patient being still under the anæsthetic and

although it was possible to obtain a good grip of the uterus they were unsuccessful. 300 c.cm. of saline were infused and the placenta easily expressed. One pint gum saline given, B.P. 115/70.

This case was successful, especially in view of the fact that the patient had been in labour many days, there was a foul discharge and an excessive amount of internal manipulation. The dangerous operation of manual removal was thus much to be avoided.

CASE 8.—Aged 27. First pregnancy. Forceps applied for primary uterine inertia. One hour after the delivery of the child the placenta was still in utero. She had lost 900 c.cm. of blood. "Credé" was attempted, the patient being still under the influence of hyoscine. This was not successful, the uterus was difficult to grasp as it seemed to have become acutely retroverted. 300 c.cm. of saline were injected and the placenta obtained. This patient had been treated during pregnancy for a vaginal discharge.

CASE 9.—First pregnancy. Admitted with the head delivered. The child was a macerated and peeling hydrocephalic monster. The placenta was still in utero at the end of four hours, the patient's condition being good, as there had been no bleeding. It was difficult to ascertain the position of the placenta by abdominal palpation because of the extraordinary tenseness of the abdominal walls. The fundus did not reach to the umbilicus, it was broader than long and examination per rectum showed the vagina to be empty. Attempts to obtain a grasp of the uterus were impossible owing to the muscular rigidity.

The cord was soft and discoloured. The vein was isolated by dissection and injection commenced; after the injection of 280 c.cm. the patient had strong uterine contractions, strong enough to make her wince and the placenta was literally shot out of the uterus into the bed.

The placenta was small, 13 × 10 c.cm., pinkish-white, without any cotyledons. There were numerous white nodules which appeared to be encapsulated, and these on section showed as fibrous nodules with a central core resembling old blood and serum. The placenta was reported by the pathological department to show numerous areas of necrosis with granules of calcification. The Wassermann reaction was negative.

CASE 10.—Aged 28. Third pregnancy. Admitted with a history of bleeding for three days following a severe fall on the previous day. She was complaining of abdominal pain located in the left loin and iliac regions. Pulse-rate 102. Temperature 101°. Urine clear. Examination of the abdomen suggested a five months' pregnancy. Delivery of a macerated fœtus occurred a day later, a large quantity of old and new blood followed the completion of the second stage, the patient's temperature being then 103°, pulse-rate 136. After a lapse of 40 minutes the placenta showed no signs of separation and unsuccessful attempts at delivery were made by Credé's manœuvre with and without an anæsthetic. The fundus was difficult to locate because of the small size of the uterus. 150 c.cm. of saline were injected in 90 seconds into the vein, and the fundus rose in the abdomen so that it was an easy matter to grasp it, and easily expel the placenta. The placenta was small and fibrous, whitish-pink in colour, and covered with old blood clot.

This case was the third attempt to obtain a placenta retained in utero after an abortion and the only one to be successful.

CASE 11.—Aged 19. First pregnancy. Normal delivery. Ten minutes after delivery the patient began to lose considerably and continuously. After 30 minutes the placenta still being unseparated a "Credé" manipulation was attempted firstly without and then with an anæsthetic. This was not successful, but success followed the injection of 400 c.cm. of saline. The patient lost 1400 c.cm. of blood before the placenta was obtained. Wassermann reaction positive.

CASE 12.—Aged 35. Seventh pregnancy. Admitted as a prolonged labour. Patient very stout with pendulous abdomen. Delivery was normal, but the uterus failed to contract after the birth of the child and the patient lost slowly. "Credé" tried without effect. 450 c.cm. of saline were injected into the umbilical vein and we waited for 10 minutes in the hope that uterine contractions would commence. As these were not forthcoming another 400 c.cm. were injected. This second injection induced strong contractions associated with uncontrolled bearing down, resulting in the delivery of the placenta. Patient had lost 1500 c.cm.

CASE 13.—Aged 32. First pregnancy. General condition poor. The birth of the child was effected by forceps following a prolonged labour. The patient bled freely, the uterus appearing to contract well but not to completely separate the placenta. A "Credé" under anæsthesia proved unsuccessful. 320 c.cm. of saline were injected into the umbilical vein and the placenta easily expressed. The placenta was small and thick. There were numerous cotyledons distinctly separated from each other, the depressions being wide enough to show the maternal surface of the fœtal membranes.

AN INVESTIGATION INTO THE MECHANISM OF DELIVERY.

Of the various causes to which the success of this injection was attributed, I think that the increase of bulk is the first and foremost. When the method was first instituted it was suggested that the temperature of the acidulated water was the main feature. The cold water caused a cessation of the hæmorrhage, and a renewal or increase in power of the uterine contractions effected the birth of the placenta. The theory put forward by Jarcho in his paper was that the injected fluid gradually found its way to the smaller vessels of the villi and bursting through the villi formed a hydroma between the maternal decidua and the placenta. This separated part of the placenta and induced uterine contractions. The hydroma then acted in the same way as the retroplacental hæmatoma and was squeezed from out of the uterus, separating more of the placenta on its way.

It was with the express desire of causing a rupture of the small veins of the placenta that I injected the saline as fast as possible rather than slowly and the results seemed to substantiate this view by the fact that separation and delivery were easily obtained. It was noticed, however, upon using coloured saline, that no saline ran away from the vulva until after the completion of the third stage—a fact that seemed difficult to explain if a retroplacental hydroma formed; even supposing that all the deliveries followed Schulze's mechanism.

One hundred and two normally evacuated placentæ were obtained immediately after birth and examined. They were then subjected to injection; it was found that on an average a placenta would accommodate 350 c.cm. of fluid before leakage occurred, and that when it did occur the fluid escaped rather at the periphery of the placenta than from the centre. This means that if the placenta in utero will hold the same quantity of fluid as the delivered placenta, few of our cases were subjected to a pressure great enough to burst the small veins and no retroplacental hydroma was formed.

DISCUSSION OF RESULTS.

Oldfield [5] mentions that in his experience he has not encountered a case of adhesion of the placenta, and that the great error, especially with beginners, is that they fail to distinguish between retention of the placenta in the vagina and in the uterus. I think we may carry his line of thought further and say that very few of those cases in which the placenta remains in the uterus are cases of completely adherent placenta and that usually the retention is caused by some abnormality in the uterine musculature, either the formation of a contraction ring or atony of the muscle.

On looking through the reports of the Leeds Maternity Hospital during the last few years, I find that most of the operations for manual removal were performed by the house surgeon, whose average stay is about six months. In well over half the cases the notes show that "removal was difficult,

the placenta seemed to be firmly adherent," and again, the report on the removed placenta showed that it was ragged and questionably complete. This year thirteen consecutive cases treated by umbilical vein injection have all come to a successful issue except the first; and this was one in which manual removal was being undertaken for a third time, and what is more important, this was the first case treated by vein injection before we had really felt our way. Without in any way wishing to disparage the reports of any of my predecessors, I cannot but think that the great bulk of placenta described as being adherent were either only partially adherent or merely retained.

I mention this point with a definite purpose. I do not see how injection of the umbilical vein can possibly aid the separation of a placenta accreta, or the truly morbidly adherent placenta; but because this condition is extremely rare, the possibility of its presence should in no way discourage the accoucheur from proceeding with injection of the umbilical vein. In all our cases the injection seemed to elicit uterine contractions to a varying degree—in one case powerful enough to cause complete expulsion of the placenta before the injection of the saline was finished. The cause is undoubtedly due to the sudden increase in the bulk of the uterine contents and can be likened to the procedure of passing the hand inside the uterus in an attempt to stop post-partum hæmorrhage. This also agrees with our findings, that the quicker the injection of the fluid is made the sooner do the uterine contractions appear.

Five of the cases described above had abnormal placentæ. These were white and fibrous, with multiple white nodules, presumably formed from old hæmorrhages, with complete absence of cotyledons. The question that naturally arose was, were these placentæ in anyway morbidly adherent, and if so, by what mechanism were they detached?

During the investigation of the injection of the recently delivered placentæ it was noticed that as the injection proceeded, the placenta became firmer and firmer, that the folds became undone and the spaces between the cotyledons filled up so that when the injection was complete the placenta had lost its soft consistency and now resembled a rubber disc, being solid enough to stand upon its edge when held in the hand. We consider that when the placenta is injected in utero the events are similar and that the placenta formerly lying in folds in the uterine cavity straightens out, its solidity increasing, while portions loosely adherent are torn away from the uterine wall. At the same time the onset or increase in strength of uterine contractions expels the placenta into the lower uterine segment or vaginal vault. A similar explanation suffices for those placentæ held by a contraction ring.

In contrast to the views of other writers, the cases mentioned above seem to show the extreme value of the Mojon-Gabaston manipulation in post-partum hæmorrhage. In twelve out of the thirteen described, bleeding was the main indication for obtaining delivery of the placenta. This is the only condition which calls for urgent treatment, and I hope I have shown that an adequate and easy method is available, involving the slightest amount of manipulation, very little in the way of surgical instruments, and no preparation, such as anæsthesia or special surgical technique, on the part of the accoucheur. The results, so far as a series of thirteen cases can show, were nearly all completely successful. Throughout the whole series there was not one case of uterine infection, and in none did the injection seem to cause any suggestion of shock, as estimated by the general condition, the pulse, and the blood pressure of the patient.

The rapidity of the manipulation is obvious, in nearly all the cases from the onset of the injection to the final delivery of the placenta not more than five minutes elapsed, a short space of time compared with that taken in the preparation for and completion of the delivery by manual removal. This is a factor to be considered when dealing with a patient who is continuously oozing blood. Other points which are noticeable are:—

(1) The value of the method in cases of ante-partum hæmorrhage after delivery either accidental or unavoidable, where the patient's general condition is such that a further loss would be detrimental. One need not await the physiological separation of the placenta, but by artificial means complete the third stage at once.*

(2) The placenta may be obtained before attempts are made to suture injuries to the genital tract, and thus overcoming the presence of the cord and the continuous loss of blood which obscure the field of operation.

(3) In cases of premature labour with retained placenta, the injection of the vein causes an increase in size of the uterus, enabling the accoucheur to obtain a firmer grasp of the uterus and effect a Credé manœuvre when this is necessary.

In conclusion, I wish to point out that the method presents to the doctor, whether of a clinic or in general practice, an easy means of obtaining completion of the third stage of labour, without the aid of any further instruments than he normally carries in his bag; without the necessity of much preparation or anæsthetic, with a fair percentage proportion of success, and above all without the great fear of puerperal infection and risk of death which accompanies the manipulation now generally practised—namely, "manual removal."

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SERUM AGGLUTINATIONS TO THE TYPHOID GROUP IN CASES OF PULMONARY TUBERCULOSIS.

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AND
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In the course of a number of typhoid agglutination tests for diagnostic purposes it was observed that anomalous reactions might occur in cases of pulmonary tuberculosis. These anomalous reactions have been noted by other observers, who have criticised the specificity of the agglutination tests on this account. Krencker [1] examined 26 cases of tuberculosis and found that 16 of them gave positive agglutination tests to the typhoid group (61·5 per cent.). Reactions were obtained in varying dilutions up to 1/500, and

* Mr. Oldfield has called our attention to cases where the placenta is delivered immediately after the birth of the child, associated with only the slightest loss of blood.

in a number of cases which were repeated the agglutinins persisted.[2 3]

The occurrence of a large number of patients suffering from pulmonary tuberculosis in the London County Mental Hospitals made it possible to investigate by modern methods the nature and extent of these anomalous reactions, and in this communication the agglutination reactions to the typhoid group of a series of tuberculous cases have been tested using Dreyer's technique and the Oxford standard agglutinable cultures. All the cases were suffering from undisputed pulmonary tuberculosis, and it was ascertained that no case had been inoculated with T.A.B. vaccine, neither was there any history of typhoid or paratyphoid fever infection.

The number of cases examined was 73, and of these 25, or 34·2 per cent., showed agglutinins to either one, two, or all of the typhoid group of organisms. The total incidence of positive agglutination reactions is shown in Table I., and the simultaneous occurrence of the respective agglutinins is shown in Table II.

TABLE I.

Number showing agglutinins to	*B. typhosus*	20 (27·3 %)
	B. paratyphosus A ..	10 (13·6 %)
	B. paratyphosus B ..	18 (24·6 %)

TABLE II.

Typhoid, Para. A and Para. B	7	Paras. A and B	1
		Typhoid only	5
Typhoid and Para. A ..	2	Para. A only	Nil.
Typhoid and Para. B ..	6	Para. B only	4

The strength of the reactions, recorded in terms of standard agglutinin units per cubic centimetre of serum, was as follows :—

B. typhosus— Showed an average of 17·7 units.	Highest recorded ..	40·0
	Lowest ,, ..	3·5
B. paratyphosus A— Showed an average of 17·1 units.	Highest ,, ..	48·0
	Lowest ,, ..	5·0
B. paratyphosus B— Showed an average of 26·2 units.	Highest ,, ..	60·0
	Lowest ,, ..	5·0

In nine cases the examinations were repeated after three months and in each case the reaction persisted with but little variation in titre. The full results on these cases are given in Table III. and exemplify the average titre obtained in these anomalous reactions and the persistence of the reaction.

TABLE III.

Case No.	1st examination.			2nd examination.		
	T.	A.	B.	T.	A.	B.
1	Neg.	Neg.	+30	Neg.	Neg.	+11·9
2	+10	+15	+30	+7·9	+13·6	+59·5
3	Neg.	+ 6·5	Neg.	Neg.	+ 6·5	Neg.
4	+40	Neg.	Neg.	+39·6	Neg.	+11·9
5	+15	Neg.	Neg.	+ 7·9	Neg.	Neg.
6	+ 8	+15	+ 6	+ 3·9	+13·6	Neg.
7	+20	Neg.	Neg.	+19·8	Neg.	Neg.
8	+ 8	Neg.	+60	+ 7·9	Neg.	+59·5
9	+30	+15	+10	+39·6	+13·6	+11·9

The greatest alteration in strength of titre was in case No. 2, positive to *paratyphosus* B, which increased from 30 to 59·5 standard agglutinin units per cubic centimetre. In cases Nos. 3, 7, and 8 no appreciable change occurred.

CONTROLS.

It might be suggested that a similar incidence of positive reactions could occur in any series of cases taken from a mental hospital population, especially in view of the work of Gilfillan and Mann,[4] and McCowan and Mann,[5] who showed the existence of definite typhoid carriers amongst mental hospital inhabitants who gave no previous history of typhoid infection.

In order to control the preceding observations on tuberculous cases the agglutination reactions to the typhoid group of organisms of 100 cases of some years' residence in mental hospital, but showing no evidence of tubercle, were investigated. Of the 100 cases examined 95 gave completely negative reactions to *B. typhosus*, *B. paratyphosus* A, and *B. paratyphosus* B, and the remaining five gave slightly positive results; details of these cases are given below (Table IV.).

TABLE IV.

Case No.	Agglutination reactions.			History of case.
	B. typh.	*B. para.* A.	*B. para.* B.	
1	+3	Neg.	Neg.	Had lived in Canada for some years prior to being admitted to Long Grove Mental Hospital. No history of T.A.B. inoculation or infection.
31	+3	Neg.	Neg.	Had lived in America for three years. No history of T.A.B. inoculation or infection.
57	Neg.	Neg.	+6·25	No history obtainable.
58	+6·25	Neg.	+12·5	Had served abroad in the Army.
62	+6·25	Neg.	Neg.	Deaf-mute. No history obtainable of T.A.B. inoculation or infection.

SUMMARY.

Seventy-three cases of pulmonary tuberculosis with a negative history of T.A.B. inoculation or infection have been examined for agglutinins to the typhoid group of organisms and these were found to be present in the blood of 25, or 34·2 per cent.

These 25 cases showed reactions of diagnostic significance, which persisted for three months during the course of the investigation.

Control investigations of 100 cases of non-tuberculous mental hospital patients showed slightly positive reactions in five cases only, one of which was possibly the result of prophylactic inoculation against the typhoid group of fevers during army service.

The results suggest that in a case showing persistent agglutination reactions of average low titre and not showing the rise of titre associated with the progress of true typhoid infections, the possibility of tubercle should not be overlooked.

In conclusion, we would thank Dr. D. Ogilvie for permission to publish these records, and Dr. F. L. Golla, Director of the Laboratory, and Mr. S. A. Mann, D.Sc., for their encouragement and advice in the course of this investigation.

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CLINICAL AND LABORATORY NOTES

TWO CASES OF TRAUMATIC DISLOCATION OF THE HIP IN CHILDREN.

By Philip Glynn, M.R.C.S. Eng.,
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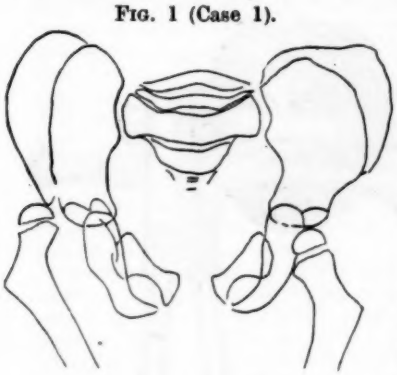
These two cases of traumatic dislocation of the hip in children were seen at one hospital within a year. In adults it is an uncommon injury forming only 2 per cent. of all dislocations, while in children the incidence is considerably less. C. C. Choyce,[1] up to 1924, was able to collect only 59 recorded cases. The reasons for its relative rarity probably are the mobility of the joint, the strength of the surrounding ligaments and muscles, and the depth of the acetabulum, while in children the injury that would produce dislocation in an adult is more likely to bring about separation of the epiphysis of the head of the femur.

The dislocation is usually due either to a weight falling on the back while the subject is in some sort of squatting position, or to a fall and landing with the leg bent under the body. The former is the usual cause of dislocation of the hip in miners, among whom the injury is probably much commoner than in the rest of the population. Whatever the cause, the course of events is the same, the Y-shaped ilio-femoral ligament acting as a fulcrum, the head of the femur is forced through the weak portion of the capsule between the pubo-femoral and ischio-femoral ligaments, its ultimate position in relation to the acetabulum, either anterior or posterior, depending on whether the limb was abducted or adducted at the time of the injury; if the former, an anterior, and if the latter, a posterior dislocation is produced.

Fig. 1 (Case 1).

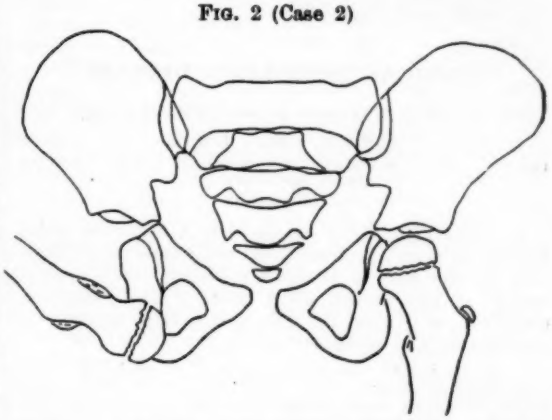


Case 1.—A child, aged 3 years 11 months, was admitted to the Belgrave Hospital with a history of having fallen out of bed with the right leg "twisted" under him. The accident had occurred five days previously. The right leg was adducted, flexed and internally rotated, and the head of the femur could be felt in the gluteal region. X rays showed a sciatic type of dislocation, the head of the femur lying in the great sacro-sciatic notch (Fig. 1). A general anæsthetic was given and reduction effected by Bigelow's circumduction method.

This case illustrates the trivial accident which may produce a dislocation when the muscles are relaxed, the child probably having been asleep when he fell out of bed.

Case 2.—A girl, aged 7 years, had been sliding down the banisters and had fallen about 10 feet into the hall below; her legs were said to be doubled beneath her. The child, seen within 15 minutes of the accident, was in extreme pain, the right thigh was almost fully flexed at the hip, abducted more than is normally possible, and externally rotated. The head of the femur could be felt above and anterior to the tuber ischii. A skiagram showed the head of the femur to be resting against the posterior lip of the acetabular notch (Fig. 2). Anæsthesia was induced with open ether and reduction was very easily effected. An adventitious movement slightly extending the thigh, the head slipped back into place before any attempt at reduction had been made.

Fig. 2 (Case 2)



This case is of interest because the head of the femur had been arrested in the first stage of dislocation and had not taken up either an anterior or posterior position. It is noteworthy that the child was supporting her right knee as though fearful that something worse might happen if she let it go. The case bears a striking resemblance to the subglenoid or luxatio erector type of dislocation occurring at the shoulder-joint.

The second case, seen 11 months after the accident, showed no disability as the result of the dislocation, and a skiagram of the hip was normal. The first case unfortunately cannot be traced.

I am indebted to Mr. C. P. G. Wakeley and Mr. R. A. Ramsay for permission to publish these two cases.

[1] Brit. Jour. Surg., 1924, xii., 52.

RUPTURE OF THE URETHRA.

By A. C. Fisher, M.B. Bristol, F.R.C.S. Eng.,
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On August 21st, 1931, a man, aged 40, presented himself for treatment. He gave a history of old-standing gonorrhœa. Four years ago, following a period of difficulty of micturition, he became entirely unable to pass water. This retention was followed by abscess formation and a severe illness.

On examination the man, who had walked 80 miles for treatment, was emaciated. The penis, scrotum, and pubes were swollen, but while the suprapubic tissues and penis pitted on pressure, the skin of the scrotum and perineal region was as hard as crocodile hide. On micturition, urine discharged itself through about a dozen sinuses above the pubes, in the peno-scrotal angle, and through a perineum which was riddled with sinuses. A few drops passed the meatus,

which was contracted to a pinhole. Fortunately the stricture did not prove impassable, and with its dilatation and a plastic enlargement of the meatus, micturition became normal, and all the sinuses closed and healed rapidly.

This case had obviously been one of rupture of the urethra, and the survival of the patient for four years after such a catastrophe without treatment was only less remarkable than his dramatic recovery following the simplest of procedures.

ATYPICAL HODGKIN'S DISEASE.

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ATYPICAL Hodgkin's disease with a leukæmic blood picture is rare. Leucocytosis, sometimes fairly high, may be met with in Hodgkin's disease, but I am not aware of any record of it with a total leucocyte count of well over 100,000, and a large number of myelocytes and metamyelocytes.

A man, aged 40, was admitted on Dec. 7th, 1931, complaining of swelling of both sides of the neck, axillæ, and groins (duration eight months), and swelling of the legs, abdomen, and face (duration seven months). He dates his illness from an attack of shivering (? fever) about a year ago. Since then weakness, disinclination for work, lethargy, and lassitude have been steadily increasing. A little work would make him feel breathless and exhausted. About a month later he felt pain round about the left iliac crest. This was followed by pain in the abdomen with flatulent distension. Some three weeks afterwards he noticed small swellings on both sides of the neck, then in the inguinal regions, and a little later in the femoral regions. Within a short time of the latter, œdema appeared on the feet, at first on the left and then the right, and it has steadily extended up the legs, scrotum, trunk, and face. About a month after the appearance of œdema, swellings appeared more or less simultaneously in both the axillæ.

He has now marked œdema almost all over the body, only the hands, the upper part of the chest, and the scalp being free from it. He looks very anæmic. Spleen is two fingers below the costal margin, its edge sharp, surface smooth; it is fairly hard in consistence, and is not tender or painful. The liver is one finger-breadth below the costal margin; its margin is sharp, and surface smooth and fairly hard, free from pain or tenderness. Almost all the superficial glands are enlarged, they vary in size from a pea to a hen's egg; a few are soft, others are hard, most of them are free, but some are adherent to each other, producing large masses, some about the size of an orange; none is adherent to the deeper structures or to the skin; the enlargement is almost symmetrical, altogether painless, and free from tenderness on pressure. There are signs of enlargement of the deeper glands, and from the history it appears as if they were the first to be affected.

During the period of a little over two months that he has been under observation there has been a slight rise of temperature (maximum 100° F.) on five occasions, but unaccompanied by any feeling of feverishness. Previous to that there may have been similar rises, but the temperature was never taken as he did not feel feverish.

Blood count has been done repeatedly and independently by different workers (hence the different terminology used), but it will do to quote a few of the results.

Dec. 9th: total red cells, 2,630,000 per c.mm.; hæmoglobin, 56 per cent. (Sahli); total white cells, 128,000 per c.mm.; polymorphs, 53 per cent.; myelocytes, 22 per cent.; metamyelocytes, 22 per cent.; lymphocytes, 3 per cent.

Dec. 21st: total red cells, 2,700,000 per c.mm.; polymorphs, 54·5 per cent.; myelocytes, 38·2 per cent.; lymphocytes, 5 per cent.; large mononuclears, 2 per cent.

Jan. 1st, 1932: total leucocytes, 22,500 per c.mm.; polymorphs, 53·3 per cent.; myelocytes, 43·3 per cent.; lymphocytes, 3·4 per cent.

Feb. 17th: total red cells, 2,590,000 per c.mm.; hæmoglobin, 60 per cent. (Sahli); total white cells, 28,200 per c.mm.; polymorphs, 70 per cent.; metamyelocytes, 4 per cent.; myelocytes, 7 per cent.; lymphocytes, 18 per cent.; eosinophiles, 1 per cent.

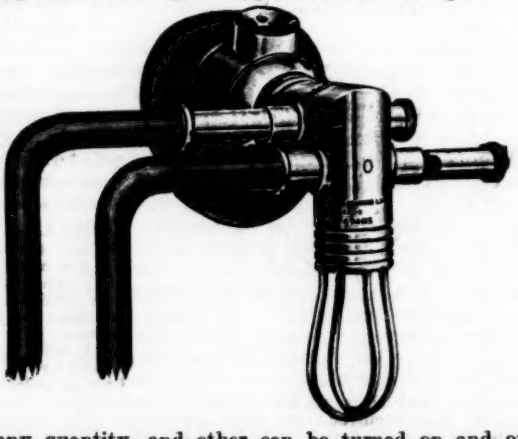
Thus the blood picture, which first resembled that of myeloid leukæmia, showed a marked change after a few weeks, in that the total leucocyte count came down by about a hundred thousand, and the number of polymorphs went up at the cost of myelocytes and metamyelocytes.

A gland was removed from an axilla and examined independently by two pathologists. Their reports are: (1) "Section of the gland shows proliferation of endothelial cells. No eosinophiles were seen. I think it is an atypical case of Hodgkin's disease, with a leukæmic blood picture and endothelioma-like glandular changes." (2) "Sections show sheets and masses of large round cells with faintly staining but clear protoplasm, and moderately chromatic vesicular nuclei. These cells definitely exhibit vasoformative character, and are therefore endothelial in origin. When examined with 1/12th oil-immersion lens some cells show multilobed nuclei. On the whole, stroma is scanty, but in some places there is definite evidence of fibrous tissue development, particularly around the large blood-vessels. At the margins of the sections in some places one finds remains of the lymph gland structure. Atypical Hodgkin's disease."

NEW INVENTIONS

A SIMPLIFIED ANÆSTHETIC APPARATUS.

THE apparatus here illustrated introduces a method of administering gas and oxygen in midwifery suitable for the general practitioner. A gas and an oxygen cylinder is fitted with Pinson valves, and connected each by a separate rubber tube with a Clover's ether apparatus, the bag mount of which is fitted with two slot valves, one for each rubber tube. The slot valves which are fitted to the angle piece holding the bag enable either gas, oxygen, or both, to be given in



any quantity, and ether can be turned on and off at will. This simple and portable apparatus enables gas and oxygen to be given alone, with the face piece if desired. If deeper anæsthesia is required for operative work or the application of instruments, the ether chamber may be added. There has been an absence of shock and hæmorrhage in all cases where the apparatus has been employed, while the use of such small quantities of ether makes for safety in bedrooms with open fires and gas jets.

The slot valve is made by Messrs. Reynolds and Branson, Ltd., Leeds.

G. R. POTTER, M.R.C.S.

MEDICAL SOCIETIES

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

THE annual congress of this society took place at the University, Edinburgh, from May 12th to 14th, the new President, Dr. A. H. H. SINCLAIR, occupying the chair. In his opening address he made a further contribution on the intracapsular extraction of cataract, with a motion picture showing the operation as he carried it out. In the Bowman Lecture Prof. Dr. J. VAN DER HOEVE dealt with Ocular Movements.

A paper was contributed jointly by Mr. SPENCE MEIGHAN and Mr. NORMAN M. DOTT on

Intracranial Resection of the Optic Nerve in Glioma Retinæ.

They recalled the work of A. B. Reese, of New York, who had shown that of eyes removed on account of glioma retinæ, 52 per cent. showed invasion of the optic nerve and that in 81 per cent. of these invaded nerves severance of the nerve at enucleation was distal to the disease extension. Hence 43 per cent. of all cases of enucleation for glioma were doomed to failure before the patient left the operating room. Yet this tumour showed little tendency to invade other than its parent nervous tissues. Death was due to backward extension to the optic chiasm and brain, not to local spread, or to glandular or blood stream metastasis. These were the facts which had led Mr. Meighan and Mr. Dott to do a more radical operation than the usual one in a patient—a girl of 2½. The child was brought because of the peculiar appearance of the left pupil and associated discomfort; a whitish appearance of the pupil had been noted six months previously. There was some congestion in the eyeball, the pupil was semi-dilated, and the anterior chamber was shallow. The intra-ocular tension was 40 mm., but there was neither proptosis nor glandular enlargement. The other eye was healthy. Glioma retinæ was diagnosed, and enucleation advised. At the operation there was difficulty in dislocating the globe; the optic nerve was severed with the globe still in the orbit. Eventually canthotomy had to be done to extract the detached eye. The sclera was intact. Histological examination revealed a characteristic retinoblastoma. The tumour had found its way along the neural tissue of the optic nerve through the lamina cribrosa, and along the interseptal pathways of the nerve. Seven days after the enucleation the orbit was reopened and an attempt made to secure a further portion of the remaining nerve at the apex of the orbit, but Mr. Dott could not satisfy himself that the nerve had been re-exposed. Fourteen days after enucleation a radium bomb was directed on to the orbit for two 48-hour periods. Then, as there was no apparent involvement of the optic nerve or chiasm opposite, he entered upon an intracranial resection of the optic nerve, and removed the entire length of that nerve to the optic chiasm. The operation was detailed, with the aid of drawings and slides. Some sepsis occurred, but subsided, and since the procedure the child's health had been excellent.

The whole of one morning was devoted to the discussion of the pre-operative and post-operative management and the complications of

Senile Cataract.

Dr. A. J. BALLANTYNE, in opening, dwelt chiefly on the complications likely to arise and how to guard against them, and on the preparation of the patient. The removal of a cataractous lens through the wall of the eyeball might sound a simple procedure, but it was surrounded with possibilities of disaster. All the standard operations could produce excellent results, but antisepsis and asepsis had not proved of the same value in ophthalmology as in general surgery, though wound infection now occurred less frequently than 30 years ago. Infection might not be obvious until as long as 72 hours after the operation. Apparently ocular inflammations were not always association with trauma; exogenous infection played a large part even in low-grade inflammations. With regard to prophylactic asepsis, many operators found that their dexterity was hampered by rubber gloves, but that both surgeon and assistants should wear masks covering mouth and nose during operation. The danger arising from chronic dacryocystitis could be avoided by excising the sac, ligaturing the canaliculi, or cauterising the puncta before considering the intra-ocular operation. It was his practice to have a culture made from the conjunctiva two days before operation, and to have the eye cleansed twice a day by irrigation with normal saline, followed by acriflavine drops (1 in 1000), with a final application of lotion and drops just before operation. If cocci were abundant in the area on the day appointed operation was postponed, and drops of 1 per cent. mercurochrome were added to the former routine.

Pre-operative measures included treatment of glycosuria, removal of septic teeth and other obvious foci of sepsis, and a purgative. Latent syphilis and tubercle could cause uveal inflammation after cataract extraction, and diabetics were more liable to hæmorrhage and to iritis than were normal persons. Should hyperglycæmia appear after operation, insulin should at once be given. Albuminuria in itself was not a bar to the operation, but it might indicate cardiovascular or renal disease. Glaucoma might follow this, as any other, type of operation, and the interval before it supervened might be as long as 20 years. Iridectomy and sclero-corneal trephining seemed to give the best results in the presence of glaucoma.

Sir ARNOLD LAWSON pointed out that the conjunctiva was, in the ordinary course, clean, and therefore he regarded most of the antiseptic washings and other precautions against contamination as needless, and indeed irritating. No cataract operation should be undertaken if in the particular case there was likelihood of pathogenic infection. All he considered necessary was to exclude the presence of conjunctival discharge, which was a sign that dangerous organisms were present. It was important that the patient should be in his best health at the time of operation, especially as most of the subjects of cataract were well advanced in years.

Mr. R. FOSTER MOORE gave as his deliberate opinion that no intracapsular extraction of cataract operation would stand the test of time, because of the outstanding danger of loss of vitreous. Moreover, the behaviour of the patient, which was beyond the surgeon's control, exerted a great influence on the result of such operations. Some regarded a loss of vitreous as of comparatively little moment, but he ranked it as the worst accident which could happen during the operation.

Blindness and its Certification.

Papers on this subject were read by Mr. JOHN MARSHALL (assisted by Mr. C. M. SMITH) and Dr. C. W. GRAHAM. Mr. Marshall said that during the past year the methods of examining and of certifying blind persons had been the subject of reports from the Department of Health for Scotland, the Council of British Ophthalmologists, and the Prevention of Blindness Committee of the Union of Counties Associations for the Blind. There were minor differences in the recommendations in these reports, and it was felt that the society could help to secure the adoption of a system which should operate uniformly over the whole kingdom. As regards definition, the committee of the Royal Society of Medicine had stated: "Experience shows that persons whose acuity is below one-twentieth of the normal—i.e., 3/60 Snellen—are usually unable to perform work requiring eyesight, while persons with vision better than one-tenth are usually able to perform some such work. Persons with intermediate degrees may or may not be able; much depends on the intelligence or bodily strength, and much on the nature of the blindness."

Mr. LESLIE PATON remarked that the definition of blindness which had been adopted at Geneva was one in which he felt a parental interest—namely, a blind person was one so blind as to be unable to perform work for which sight was usually essential.

Mr. J. H. FISHER expressed the admiration he felt, which was shared by his English colleagues, of the great lead which Scotland had given in this matter of certification of the blind. He agreed with those in Scotland that the right system was the clinic system. In scattered parts of the country where certain of the patients could not come under the observation of the clinic it was his strong view that the coöperation of two surgeons was the solution. There was difficulty, in regard to a specific standard, in determining whether a person should be put into the category of the blind or into that of the non-blind. He thought some latitude should be given to the certifying surgeon, or preferably surgeons. There were patients whose direct sight, especially distant vision, might be very low, who were able to read ordinary school-books. One could not deny that in some cases incapacity was exaggerated by the patient when it was a question of obtaining money. It was hoped to be able to establish a reliable census of blind persons, and a determination of the causes of blindness; this information, when obtained, would provide the best pointer to the best methods of prevention.

Mr. J. TUDOR THOMAS read a communication, illustrated by slides, on

Transplantation of Scleral Tissue on to Rabbit's Cornea.

He had carried out this transplantation on five rabbits, and in all of them the graft was well united. He found it more difficult to be precise with this operation than with transplantation of cornea. If the graft was to remain avascular, it was essential that union should be secured of all its parts. He had established the facts that (1) scleral tissue could be successfully transplanted to replace the whole thickness of the cornea; (2) the opacity in successful scleral grafts became less; (3) it was possible to graft scleral tissue on to the cornea without any vascularisation taking place, under the same conditions as those which resulted in transparent grafts of corneal tissue.

During the congress many clinical cases were inspected and discussed. A museum of ophthalmological exhibits had been organised by Miss Ida Mann.

MANCHESTER MEDICAL SOCIETY.

AT a meeting of this society on April 6th Dr. R. RALSTON PATERSON read a paper on the

Radio-sensitivity of Tumours.

Tissues, he said, vary markedly in their response to radiation. The property of tissue which underlies this variable response is called radio-sensitivity, or at the other end of the scale radio-resistance. In particular, tumours show a wide range of such sensitivity. By contrasting the sensitivity of growths with the sensitivity of the skin—in both cases using the minimum lethal dose as the standard—it is possible to group tumours into four groups.

(1) *Radio-sensitive Group.*—This is pathologically a heterogeneous group of growths, but clinically the group includes many highly malignant growths which metastasise early. The lethal dose for this group of tumours is less than the lethal dose for the skin, and thus sufficient radiation to produce lethal changes can be given by external methods alone. External methods of irradiation, X rays in larger tumours, external radium in more localised tumours, thus become the treatment of choice.

(2) *Epitheliomata.*—In this group are included also the epithelial tumours of breast, excepting true adenocarcinoma, because whatever their nature they act from the point of view of their reaction to radiation as do the squamous epitheliomata. This group includes a high proportion of the malignant tumours and is therefore correspondingly important. To produce lethal changes in those growths, a quantity of irradiation must be used which is approximately in the region of the lethal dose for skin. They therefore do not lend themselves to satisfactory curative treatment by external methods of irradiation alone. In practice they have to be treated, if treated by irradiation at all, by "localised" irradiation, which can only be achieved by means of radium. The treatment of choice must therefore lie between such localised irradiation methods and surgery. This choice is made by a contrast of the ease or difficulty of technical procedures involved, of functional results, or of probable survival by one or other method.

(3) *Adenocarcinomata.*—In this group growths appear to require a lethal dose greater than the skin lethal dose, and normally equal to the lethal dose for the tumour bed. Irradiation, whether external or localised, therefore can only act as a cautery. In view of the fact that there are many safer and less expensive cauteries, irradiation seems contra-indicated, and the treatment of choice in this group is always surgery.

(4) *Radio-resistant.*—This group consists of a group of tumours heterogeneous pathologically, but for the most part of connective tissue origin. Like normal connective tissue they are highly radio-resistant, and it would appear that the lethal dose for these tumours is not only greater than the lethal dose for skin, but even greater than the lethal dose for the normal tissues in which these tumours tend to grow. The use of irradiation to effect direct curative action therefore appears more likely to do damage to the normal than to the abnormal tissue, and is therefore definitely contra-indicated. In this group, however, should surgical extirpation be impossible, another process becomes valuable, that

called by Ewing "growth restraint." Here, repeated small doses of irradiation are used to produce an effect on the endothelial lining of the vascular system of the tumours. A process resembling endarteritis obliterans ensues, with resulting cessation of, or marked slowing of growth.

These four groups thus cover the whole field of tumours, and give us an indication as to the choice of treatment once we know in which group any particular tumour belongs. In this chapter of radio-sensitivity there are two likely fields for research work in the future. In the pathological field there is the problem of ascertaining the exact criteria underlying the relationship between pathological types and radio-sensitivity. In the experimental field attempts are being made to increase radio-sensitivity, either by alterations in the time-factor of treatment, or by intravenous methods. Could such increased radio-sensitivity be produced, tumours would then be rendered more amenable to irradiation methods.

Prof. S. L. BAKER read a paper on the

Virus Theory of Cancer.

Although many and various predisposing "causes" of cancer are known, he said, the fundamental cause of the abnormal cell proliferation, which is the central fact of cancer, can be narrowed down to two possibilities :—

(1) The *biological* or *mutation theory*, which postulates an alteration or mutation of the cell initiated by some chemical or physical stimulus. This change once initiated is handed on to subsequent generations of cells by the ordinary laws of cell inheritance—the persistence of an acquired character.

(2) The *virus theory* postulates a continuously acting cause ; an infection of the cell by an agent which multiplies and is thus carried on through successive generations of cells.

In the case of mammalian tumours there is a great weight of both histological and experimental evidence in support of the cell as the "cancer unit." Cancer in mammals can be transmitted experimentally only by grafting living tumour cells to new hosts of the same species. No cancer-causing agent has ever been separated from the cells of mammalian tumours. There was no experimental evidence that suggested that a living virus could be responsible for the production of a tumour until, in 1911, Peyton Rous published his first account of a fowl sarcoma transmissible experimentally from bird to bird by a filtrable agent separable from the tumour cells. It is now known that many different types of sarcoma in the fowl can be transmitted in this manner. The fowl sarcomata, apart from this peculiar property of filtrability, differ in no way from mammalian sarcomata. The tumours occur sporadically and there is no evidence of infectivity under natural conditions. The tumour is essentially a local lesion and there is considerable evidence to show that metastases are produced by detached cell fragments, as with mammalian tumours, and not by the dissemination of the infective agent about the body. A strain of fowl sarcoma is not always filtrable and often passes through stages where it can only be transmitted by cell suspensions. Carcinomas occur in fowls but a transplantable strain has never been established, and their filtrability has therefore not been studied.

The exact bearing of these fowl tumours upon mammalian cancer remains at the present time a matter of conjecture, but the facts so far obtained are so peculiar and striking that a continued investigation of them is clearly indicated.

REVIEWS AND NOTICES OF BOOKS

Antigens in the Light of Recent Investigations.

By OLUF THOMSEN, Professor of General Pathology at the University of Copenhagen. Translated from the Danish by HANS ANDERSON, M.D. Copenhagen: Levin and Munksgaard. 1931. Pp. 187.

THIS valuable monograph is a review of the modern position of the antigenic structure of proteins and bacteria. The former are considered with especial reference to their antigenic constitution, the chemical modification of antigenic specificity, and the question of haptenes. Haptenes, as is to be expected, are largely dealt with from the point of view of group and type characters, and the influence of soluble carbohydrate haptenes in determining types. This naturally involves an especially detailed consideration of the pneumococci, although Lancefield's work upon the hæmolytic streptococci and Julianelle's investigation of the Friedländer group are given adequate treatment. The complex question of the constitution of toxins, the basis of the Wassermann test, and allergy are also discussed. It is hardly to be wondered at that Prof. Thomsen is less successful in dealing with these problems than with the more straightforward ones of antigenic structure. The book contains full references and the author has shown good judgment in the selection of his data from the large mass of material at his disposal. The English translation is excellent.

Wheeler and Jack's Handbook of Medicine.

Ninth edition. Revised by JOHN HENDERSON, M.D., F.R.F.P.S. Glasg., Physician, Glasgow Royal Infirmary ; Professor of Medicine, St. Mungo's College, Glasgow. Edinburgh: E. and S. Livingstone. 1932. Pp. 654. 12*s.* 6*d.*

"Wheeler and Jack" is as valuable now to the student and practitioner as it has ever been in its 40 years of existence. Like all standard text-books, it has an impersonal quality ; it is greater than any of its authors. Dr. Alexander Wheeler laid its foundations in the first seven years, and Dr. W. R. Jack built up from his tradition a work which, while appearing the same, has evolved with the momentous development of medicine in our times. Dr. Jack died in 1927, but his successor, Prof. John Henderson, proves himself in the ninth edition to be a worthy successor. He has thoroughly revised the book and made many modifications and additions, recasting the work on vitamins, gastric disorders, pernicious anæmia, arthritis deformans, and encephalitis lethargica. He has added sections on coronary thrombosis, bundle-branch block, syphilis of the stomach, hepatic efficiency, and cholecystography, acute febrile polyneuritis and narcolepsy, and various types of neurosis. Possibly the neurological and psychological sections of the book will increase in importance as the significance of these subjects is increasingly realised by examiners. It seems anomalous that a text-book should still contain many pages

devoted to tropical diseases rarely encountered in this country, while anxiety neurosis, which the practitioner will encounter every day, and probably more than once a day, should occupy a section of less than two inches. The reason is, no doubt, that the proportions of the matter in a text-book much used by students for purposes of revision are inevitably determined rather by the requirements of the examination paper than by the exigencies of practical life. In the more conventional departments of medicine, however, the student can safely turn to "Wheeler and Jack" as a reliable and lucid guide both for his examinations and in his practice.

Selected Writings of John Hughlings Jackson.

Vol. II. Edited by JAMES TAYLOR, M.D., F.R.C.P. London: Hodder and Stoughton. 1932. Pp. 510. 25s.

Hughlings Jackson's contributions to medicine ranged far beyond the field of technical neurology; how much farther can be gauged by turning over the pages of this second volume of "Selections." He was a master of both the abstract and the concrete, the subjective and the objective. Minute attention is paid to the stages and signs of optic neuritis, to the action of the intercostal muscles during surgical anæsthesia, and to the movement of the vocal cord when the recurrent laryngeal is stimulated; and from such studies in miniature, as though the observing eye were gazing down a clinical microscope, he moves away to another world, discussing with no less ardour of mind the factors of insanities, the application of evolutionary principles to the build and functions of the nervous system, the use of words and other symbols in mentation. Not content with such colossus strides over the realm of neurological and psychological science, he turns aside lightly to deal in whimsical yet penetrating fashion with punning and joking, in a memorable address. None is more revealing in respect of Jackson's personality; none more typical of his fine mental qualities. He tells us that sense of humour implies surplus intellect, and after illustrating the true implication of punning, as constituting a mild mental diplopia, he hints that his address on jokes is itself merely a big poor joke, yet something more also, for it has an intimate bearing on the study of mental symptoms in "serious diseases." No remark of his embodies a more suggestive truth.

A glance at the long bibliography published in this volume will show how much of Jackson's writings remain in their old format, how little, comparatively, has been chosen for reproduction. The possessor of these new publications can now read at will and ease the choice products of his genius; they form a Jacksonian thesaurus to be pondered over in the leisure hour; and their pages echo the voice and mirror the mind of the best-loved and most gifted among the neurologists of his time.

Ergot and Ergotism.

A Monograph. By GEORGE BARGER, F.R.S., Professor of Chemistry in Relation to Medicine in the University of Edinburgh. London: Gurney and Jackson. 1931. Pp. 279. 15s.

ERGOT has long been a subject of interest to physician, chemist, and pharmacologist. Since the middle ages, recurrent epidemics of ergot poisoning have been recorded in various parts of Europe. It has been employed in obstetrics since the seventeenth century, and for nearly 100 years chemists and pharmacologists have laboured to elucidate the mysteries of its active constituents. Everyone will welcome, therefore, a monograph by the discoverer of ergotoxine, who, in what he describes as "a happy partnership in research more than 20 years ago," made important contributions to our knowledge of the subject. Prof. Barger's book is wholly admirable. Little of importance published in Europe or the United States has been overlooked by him, and he has given us what we believe to be the most complete and best account of ergot and ergotism in the English language. The work is divided into six chapters, the first of which discusses the history and distribution of rye in various countries, its importance as an article of diet, its infection with *Claviceps purpurea*, the numerous designations of ergot, its obstetrical use in the eighteenth century, and its introduction into official medicine. The second deals with the two types of ergotism: the gangrenous and the convulsive. The former is easy to understand, for ergotoxine and ergotamine produce a prolonged constriction of the peripheral vessels. But until recently the convulsive variety was inexplicable, for none of the active constituents which had been isolated was found to be capable of producing the symptoms. Then Prof. E. Mellanby's work suggested the convulsive seizures were due to some unidentified neurotoxin, present not only in ergot but in rye itself, which acts only when there is a deficiency of vitamin A in the diet. Prof. Barger, commenting on the recorded epidemics of convulsive ergotism, points out that they afford considerable support for this view. The remaining chapters deal fully with the botanical, chemical, pharmacological and clinical, pharmaceutical and forensic aspects of ergot; and the whole is rounded off with an extensive bibliography and index of authors. The Dohme lectureship, instituted at the Johns Hopkins University to promote the development of a more intimate relationship between chemistry, pharmacy, and medicine, and held by Prof. Barger in 1928, has, indeed, fulfilled the object of the founder by leading to the publication of this important work.

Phantastica.

Narcotic and Stimulating Drugs: their Use and Abuse. By LOUIS LEWIN. Translated from the second German edition, by P. H. A. WIRTH, Ph.C., B.Sc. (Munich). London: Kegan Paul, Trench, Trübner and Co., Ltd. 1931. Pp. 335. 15s.

THERE is perhaps no subject which presents more difficulties to the pharmacologist than the action of drugs on the higher centres of the brain. Animal experiments, as a rule, give little or no information; and human consciousness is mysterious and almost incomprehensible. Yet chemical substances affecting consciousness are used by civilised and uncivilised peoples in all parts of the world. The history of the use and abuse of these stimulating and narcotic drugs, and the nature of their effects, are subjects of interest therefore, not only to the pharmacologist, but to physician, psychologist, and intelligent layman alike. All these will find the information they need in the book by Mr. Louis Lewin. Drugs capable of effecting a modification of cerebral function are classified by the author into five groups. The first he calls euphorica, or mental sedatives, of which the best known are opium and its alkaloids, and cocaine. The second is phantastica, or drugs of illusion and hallucination. This includes mescal buttons (*Anhalonium lewinii*) and Indian hemp. The third is the

inebrantia, containing alcohol, chloroform, ether, and the rest; the fourth, hypnotica, with chloral, veronal, sulphonal; and the last, excitantia, or mental stimulants, which include tea, coffee, cocoa, tobacco, and betel. All these are discussed in a manner which will appeal to the general reader. The author's opinions on certain questions, such as the action of alcohol or the habit-forming properties of codeine, may not commend themselves to orthodox pharmacologists; prohibitionists may resent his gloomy prognosis of their efforts to save mankind from themselves. But none can fail to be interested in this lucid and forceful account of narcomania, and in the author's views of the fundamental basis of drug addiction.

Fraud in Medico-legal Practice.

By Sir JOHN COLLIE, C.M.G., M.D., Lt.-Col., R.A.M.C. London: Edward Arnold and Co. 1932. Pp. 276. 10*s.* 6*d.*

IN his new book on fraud in medico-legal practice Sir John Collie gathers together a mass of information and experience on the testing and detection of unsubstantial claims. Not only does he explain in detail how to deal with the wilful simulation of all kinds of symptoms and the deliberate exaggeration of an existing illness or injury; he also considers those borderline cases where hysteria is on the edge of fraud or where patients cannot summon up the will to go back to work. Converse examples of courage and resolution are common enough but doctors may not find it hard to recognise his picture of the patient who becomes obsessed with his illness, who merely marks time until legal proceedings are finished and damages or compensation are finally awarded, and who, after repeated medical examinations and the prolonged receipt of sick allowances, begins to feel a sense of having been wronged. When actual physical injury has subsided, subjective symptoms appear. Traumatic neurasthenia may be far more serious than the initial accident and its immediate consequences. Cases which were at first not fraudulent may end in fraud through want of pluck, "their idleness, their introspection, the attitude of their medical attendants, all combine to demoralise them." Whole-hearted fraud employs endless cunning. The successful counter-methods and ruses recounted by Sir John Collie show how ingenuity can meet its match.

Naturally the effect of the book suggests a sceptical outlook upon claims for damages or compensation. As the preface observes, deserving cases may receive less than their due share of consideration if unworthy persons make improper calls upon help and sympathy. Insurance against industrial accidents and sickness costs far more than the original actuarial estimates. The last report on the Workmen's Compensation Acts contained an official estimate that their total cost to all the industries and employments of the country is over twelve million pounds a year. Here, therefore, as in other social services, any lowering of the standard of care in examining claims or certifying disabilities means an immense wastage of money and indirectly a vastly increased burden upon the community. The medical witness will be asked to give his opinion, either in the law courts or in the preliminary stages of considering a claim. The book contains an admirable chapter on the law of libel, which explains the extent of privilege as well as giving some useful hints on preparation for the witness-box.

Life of Mendel.

By HUGO ILTIS. Translated by EDEN and CEDAR PAUL. London: George Allen and Unwin, Ltd. 1932. Pp. 336. 12*s.* 6*d.*

THIS book is written by the right author, for Dr. Iltis is the present Principal of the Deutsche Volkshochschule in Brünn, was secretary to the International Mendel Memorial Committee some 20 years ago, and is himself known as a specialist in botany through his great volume on the world's flora. But in spite of this aptitude for the subject, Dr. Iltis confesses that he has found considerable difficulty in obtaining material for the biography; Mendel kept no diary; and as a priest he had neither correspondence with women—and letters to women often form the most revealing part of a career—nor freedom in the utterance of philosophical views. By personal taste, however, he was a reserved man—so reserved that at his death it occurred to no one in his own monastery that he was a man of great mark. They knew him as an energetic prelate, who faced lay authority in defence of their rights, and as a hard-working public servant in several departments of agriculture and political economy; but his science they regarded as his amusement (which it was) and as no more. The few documents which he left behind him were burnt. Thus it came about that his short monograph on heredity was forgotten for decades, to be rediscovered in 1900, and give its remarkable impetus to the doctrines of the subject.

This short life is well written. In the first chapters we get detailed indications of the kind of man Mendel really was, and of the manner in which he acquired knowledge and reacted to his environments. We see that his temperament was practical and averse from premature or unsupported speculation, and that his range of experiment was much larger than is usually supposed. Much of his biological work was never mentioned by himself, as he knew that it would give offence to clerical zealots that he should be so employed. His botanical experiments were begun before the publication of Darwin's Origin of Species, though when that work appeared he read it. The reverse is often stated, but as a matter of fact there is a copy of the book in the library at Brünn containing manuscript notes by Mendel, and even a record that he considered that his work was helping to fill up gaps in Darwin's arguments. What is generally understood by Mendelism will be found in Chapters 10, 11, and 12, which form a summary both of what Mendel did and why he was doing it. After eight years of work the results were put into a paper entitled Experiments in Plant Hybridisation, which he read at the Brünn Scientific Society in 1865 to a completely puzzled audience. The proceedings of the Society were sent, in the course of an exchange of courtesy between learned bodies, not only to Vienna and Berlin, but to London, Warsaw, and St. Petersburg, but they attracted no attention whatever. Indeed, the scientific world did not become aware of Mendel until 35 years later. Dr. Iltis discovered the original MS. of this classic paper in a box destined for the flames.

So much has been written on Mendel's doctrines that the story of the researches will be familiar to many, but it is made more piquant by the revelation of Mendel's personality. He is usually thought of as a good old priest making pottering inquiries into the habits of bees and peas in a convent *potager*; he was a fighting mitred abbot, and a finished man of business.

Blutkrankheiten und Blutdiagnostik.

Fifth edition. By Dr. med. OTTO NAEGELI, Professor der inneren Medizin an der Universität Zürich und Direktor der medizinischen Universitätsklinik. Berlin: Julius Springer. 1931. Pp. 704. RM.89.60.

IN the eight years which have elapsed since publication of the previous edition of this well-known text-book, much new work on hæmatology, which calls for comment, has appeared. With his customary vigour and individuality the author discusses most of the recent advances in this branch of knowledge and has once more brought up to date the most exhaustive text-book that we know of on blood diseases and their diagnosis. Chemical, microscopic, and physical methods of examination; descriptions of cell elements, their morphology, embryology, physiology, and pathological alterations; and finally, descriptions and discussions of the diseases in which blood changes occur are all included. It is noteworthy that two pages of hæmatological nomenclature precede the text in this edition. A term is given, followed by the name of its author, the sense in which it is used, and the number of the page on which it is described. This innovation will be welcome to many who have not followed the controversies on this subject of the last thirty odd years. Among those who are better informed some will be found to protest, for example, against the following premature pronouncement: "Hämocytoblast (Ferrata). Theoretische Stammzelle der roten und weissen Blutzellen, morphologisch identisch mit Myeloblast. Neuerdings als Begriff aufgegeben. S. 276." Indeed from the first page of the preface, which includes a solemn warning against the teaching of Maximow, the author's bias is proclaimed, and throughout the volume no opportunity is lost of returning to this battle ground of the origin of blood-cells. Prof. Naegeli holds to his original views upon the dual origin of the leucocytes and in the sections on embryology and extramedullary myelopoiesis he answers the arguments which his opponents have brought forward in the last eight years. The great interest and value of this text-book are in no small measure due to the author's continual references back to genetical relationships of the cells under discussion, whether one agrees with his conclusions or not.

Among new clinical methods the blood sedimentation test is critically examined and its value is not considered to be very great. On the other hand, a method of estimating globulin worked out in the author's clinic is regarded as important in establishing the existence of infection and cachexia. Special stress is laid upon the distinction between megaloblasts and normoblasts, and upon the identification of pathological neutrophiles. Some of the most valuable additions in the present volume are the author's new classification of the anæmias, a much enlarged chapter on pernicious anæmia, and full accounts of the various forms of septic angina, including sections on agranulocytic anæmia. The illustrations in colour are lavish and excellent and a bibliography accompanies each section.

Journal of Pathology and Bacteriology.

THE May number (Vol. XXXV., No. 3, pp. 301–476) contains the following papers.—A Further Account of the Trinidad Outbreak of Acute Rabic Myelitis: histology of the experimental disease, by E. W. Hurst and J. L. Pawan (London and Trinidad). In Trinidad rabies causes a disease in cattle mistaken for botulism, and one in man mistaken for poliomyelitis; dogs are not concerned, and the infection is probably passed from cattle to man by the vampire bat. Full details are here given of the experimental inoculation of monkeys, and of the histology of the disease so produced. The histological details of human rabies are not as well known as they ought to be.—The Classification of Cancer of the Rectum, by C. E. Dukes (London). Cases may be divided into those confined to the wall of the rectum, those which have spread to extra-rectal tissues, and those which have in addition involved the regional lymphatic glands. The prognosis of the three groups is as would be expected.—The Pathology of Aneurysm: a review of 167 autopsies, by H. G. Garland (Leeds). This analysis of the aneurysms found in 12,000 consecutive examinations at Leeds brings out the great numerical preponderance of aortic lesions and the unimportance of syphilis in the smaller vessels. Many interesting details are given, and there is an ample list of literature.—A Malignant Melanotic Tumour of Ganglion Cells arising from a thoracic sympathetic ganglion, by W. G. Millar (Edinburgh). In a man of 34.—Medulloepitheliomas of the Brain and Retina, by T. B. Davie (Liverpool). One of the brain (rare) and two of the retina.—The Isolation of Motile Organisms from apparently non-motile cultures of *B. typhosus*, *B. proteus*, *B. pestis*, *B. melitensis*, &c., by D. B. Colquhoun and J. Kirkpatrick (Glasgow). When grown on semi-solid media several organisms which are not motile on the ordinary solid or liquid media develop flagella and motility, or, having flagella already, become motile. It seems likely that the conditions of growth enable motile individuals to emerge from their non-motile populations and become manifest.—The Occurrence of True Bone within a Renal Calculus, by G. Stuart and K. S. Krikorian (Jerusalem). Some infective process causes an inflammatory condition in the submucous connective tissue which leads to bone formation. The bone then sloughs out into the lumen of the pelvis and forms the nucleus of a calculus.—The Effect of Carbon Monoxide and other agents upon the rate of Tumour Growth, by J. A. Campbell (London). Laborious experiments on mice show that chronic carbon monoxide poisoning stunts general growth and delays the growth of transplanted tumours.—The Interstitial Reactions caused by Various Dusts and their influence on Tuberculous Infections, by E. H. Kettle (London). Siliceous dusts which are effective in causing dangerous silicosis in man may be identified by their producing lesions in animals in which tubercle bacilli grow freely.—The Transmission of Fowl Tumours to Pheasants, by C. H. Andrewes (London). Three fowl tumours grew well in pheasants though serial transmission failed; three others did not grow.—Abnormalities of the Mouse Suprarenal, by R. Whitehead (Manchester). Varix found in examining 477 mice.—Fœtal Rickets, by J. P. Maxwell and C. H. Hu (Peiping) and H. M. Turnbull (London). Another clear example of fœtal rickets in the child of an osteomalacic mother dying three days after birth; full histological description and discussion.—Tumour Immunity. II. Antiserum Treatment of Spontaneous Mouse Carcinoma, by T. Lumsden (London). The euglobulin fraction of anticancer (man, rat, mouse) sheep sera can invoke or increase the resistance of a proportion of mice to their own tumours.—Fat Mobilisation in Starvation, by J. H. Dible (Liverpool). The fatty infiltration of the liver caused by starvation depends on the size of the fat depôts available.—A case of Periarteritis Nodosa in a syphilitic subject, by J. Gray (Aberdeen). A rare and accidental association.—Oxygen Poisoning in Rats, by A. E. Boycott and C. L. Oakley (London). Death is caused by massive pleural effusions.

Obituary notices of R. Stenhouse Williams and A. L. Urquhart.

THE LANCET.

LONDON: SATURDAY, MAY 21, 1932.

TOXÆMIA OF PREGNANCY.

EVEN to-day it is impossible to assure a healthy woman that she can face pregnancy without fear of toxæmia, and Prof. J. M. MUNRO KERR [1] is right in saying that few ætiological problems more urgently need solution. Despite much research, we have not yet been able to dissociate cause and effect among the changes observed, for instance, in the blood and urine, and at least four theories still hold the field—the placental theory, the maternal theory, the fœtal theory, and the pressure theory. Nor are the interrelations of the various disorders of pregnancy adequately understood. Many people regard albuminuria as the first stage in a process which, unchecked, may lead straight on to the eclamptic fit; on the other hand, G. W. THEOBALD in our columns last autumn was still able to argue that albuminuria is due to mechanical causes and is unrelated to the widespread havoc associated with eclampsia. The Aschheim-Zondek test shows clearly that chemical changes occur in the female organism from the first few days after conception, and Prof. MUNRO KERR holds that the grave toxæmias are in line with the mild symptoms, such as morning sickness, which may appear very early in pregnancy. He points out that it is now a matter of exact knowledge that in the early weeks there is great endocrine activity, considerable destruction of the uterine mucosa, transport of syncytium and portions of villi by the circulation, and distinct alteration of the metabolism. The placenta is degenerating from the sixth month onwards, and the products of protein autolysis may then prove the "last straw" for a long-overburdened organism. To Prof. MUNRO KERR pregnancy toxæmia is the resultant of a long struggle between the protective activities of the woman's organs and tissues on the one side, and the attacking forces of endocrine secretions, digested endometrium, and metabolic disturbance on the other. He urges his students to investigate the clinical and chemical features of early pregnancy, searching above all for the clue to morning-sickness.

Several investigations into the chemistry of normal and toxic pregnancy have been published within the last few months. Some are positive and some are negative. H. J. STANDER,[2] recalling an increase in blood guanidine reported by MAJOR and WEBER in cases of arterial hypertension, has made routine investigations into the blood guanidine of his eclamptic patients and of normal pregnant women at term. He did not find in eclampsia any definite or marked increase in blood guanidine, nor did he find a hypoglycæmia. The eclamptic did, however, show an increased uric acid content in the blood and a decreased CO_2-combining power—a phenomenon noted also by GORDON KING [3] in his survey of 33 cases in China. STANDER concludes, from these observations and from clinical experience, that calcium therapy is not a rational measure in eclampsia. D. F. ANDERSON [4] has also been unable to ascribe any effect to calcium gluconate injections beyond saying that in the doses given they had no abrupt effect on the frequency of the fits. He definitely found subnormal serum calcium values (9 mg. per 100 c.cm. or less) in 82 per cent. of 44 eclamptic women he examined, but he also found low calcium values in 17 per cent. of 35 cases of normal pregnancy which he examined at full term, during labour, or shortly after delivery. While he regards the low concentration of calcium in eclampsia and pre-eclampsia as suggestive he does not think it can be definitely regarded as an ætiological factor; we are to consider it rather as a sign, just like the raised inorganic sulphur content of the serum, which may be as high as 3·6 mg. per 100 c.cm. in eclamptic cases but is not raised in other toxæmias or in normal pregnancy (D. F. ANDERSON and S. L. TOMPSETT [5]).

In his view that eclampsia is not caused by any renal lesion, THEOBALD finds a supporter in H. ACOSTA-SISON,[6] who has made a clinico-pathological study of 28 cases. She considers that the eclampsia toxin first stimulates and irritates the bulbar centre, which may be so sensitive that it is paralysed by a dose of toxin insufficient to cause organic lesions in the heart, liver, or kidney; though as a rule organic lesions accompany severe symptoms. If the dose of toxin is excessive, extensive lesions may be caused without any of the symptoms of irritation of the centre—e.g., high blood pressure, headache, and convulsions—because the centre is paralysed from the first. Her cases show that death can take place with no more severe injury of liver or kidney than a slight cloudy swelling. Nor was anything more than cloudy swelling of liver and kidney found by N. J. BERKWITZ and N. H. LUFKIN [7] in their cases of pregnancy paralysis—a condition for which they prefer the term "toxic neuronitis" and which they definitely link with the other toxæmias as a form of auto-intoxication affecting the nerve-cells and peripheral nerves. They have collected 38 published cases and added four of their own, and they regard the condition, although rare, as one of great severity, demanding immediate interruption of pregnancy. Prof. MUNRO KERR'S emphasis on the importance of morning sickness is justified by the fact that toxic neuronitis

[1] Edin. Med. Jour., April, 1932, p. 52.
[2] Amer. Jour. Obst. and Gyn., March, 1932, p. 373.
[3] Nat. Med. Jour. of China, 1930, xvi., 653.
[4] Brit. Jour. Exp. Path., April, 1932, p. 182.
[5] Ibid., p. 130.
[6] Amer. Jour. Obst. and Gyn., 1931, xxii., 35.
[7] Surg., Gyn., and Obst., May, 1932, p. 743.

appears about the third or fourth month in cases of hyperemesis; indeed the paralysis may be mistaken for inanition as the result of uncontrollable vomiting.

DIETARY SURVEYS.

THE direct experimental method has recently been applied with good effect to the science of nutrition, animals and less frequently groups of human subjects being employed to test the effect of variable dietetic factors on development and liability to disease. But another method of investigation is sometimes employed, consisting of a careful survey of the food actually consumed by selected groups of individuals over a definite period. If the subjects of such surveys are apparently normal healthy individuals it is assumed that the diets observed are more or less adequate. Moreover, it is possible from such studies to gain some information about the amounts of various food components habitually consumed by members of various classes of society, and by comparing these amounts with figures obtained in the laboratory for the food requirements of normal healthy subjects it may be possible to gauge roughly the prevalence of any marked degree of under-nutrition in a given section of society. CATHCART and his co-workers have been engaged in a series of surveys of this type, and have just published the results of their inquiry into the diet of families in Cardiff and Reading.[1] The inquiry was limited to working-class families, and comprised a total of about 370 individuals in each town. As in their previous study, carried out at St. Andrews, they found the average daily caloric value of the diets ranged fairly close to the accepted figure of 3000, and the amount of fat consumed was in both instances distinctly higher than the generally accepted average—namely, 113·6 g. in Cardiff and 100·8 g. in Reading. Special interest is attached to the analysis of the poorest diets. The mean value in 8 families in Cardiff and 12 in Reading was less than 2500 calories, and in three instances was less than 1800. It was found that this shortage of food was not occasioned solely by the smallness of the income, but arose partly through the improvidence or incapacity of one or the other parent. It appears that with very restricted incomes a distinctly smaller proportion of the weekly wages is devoted to the buying of food in these English towns than in Scottish towns, which fact is largely accounted for by the higher rents paid in the English towns. Special attention was devoted to the physique of the children belonging to the families under observation. It did not appear that any serious degree of malnutrition existed among them, although the numbers examined were too few for any decided opinion to be formed on this point.

The practical use to which dietary surveys can be put is illustrated by a circular recently issued by the United States Department of Agriculture regarding midday meals for pre-school-children.[2] The object of the circular is to suggest suitable menus for young children attending day nurseries and nursery schools. The menus are carefully constructed so that they furnish approximately the same amounts of the main food constituents and the same total energy value. These standard quantities were arrived at after a consideration of reliable surveys of the diets of normal healthy young children brought up in private families with varying incomes. Some of the main findings of four such surveys are reproduced in the present report. The mean energy value of diets of children aged 2 to 3 years varied in the different surveys between 1200 and 1400 calories; of those aged 3 to 4 between 1330 and 1500 calories; and of those aged 4 to 5 between 1430 and 1720 calories. In some of these surveys the intake of calcium, phosphorus, and iron was estimated as well as that of protein, fat, and carbohydrate, but the quantities of these mineral elements allowed in the proposed dietaries are based rather on previously published individual metabolism experiments than on the results of such surveys. Attention has been paid to the vitamin content of the diets, and free use is made of milk, eggs, salads, fresh vegetables, and cod-liver oil. The general plan of the scheme is to provide at the nursery school one-half of the estimated daily requirement of protein, phosphorus, and total energy, and rather more than one-half of the calcium and iron needed. The average cost of the raw materials for meals constructed from the proposed menus and actually served at one particular institution worked out at 17 cents (8½*d.* at par) per child per day during the first half of 1930, individual menus costing from 11 cents to 25 cents (5½*d.* to 1*s.* 0½*d.*). These figures are certainly very much higher than some recently quoted in the report[3] of the Advisory Committee on Nutrition, as representing the actual expenditure on children's food allowed by certain of the public authorities in Great Britain. From a qualitative point of view the recommendations of this committee agree well with those of the compilers of the American report.

A NEW PITUITARY SYNDROME.

TUMOURS of the pituitary gland have always excited great interest because of the widespread disturbance that they produce both in the endocrine system and in other parts of the body. With few exceptions they are adenomas arising in the anterior lobe, a structure which is composed of three types of cell, chromophobe, acidophile granular, and basophile granular cells. Of these only chromophobe and acidophile cells have hitherto been encountered in tumours. Adenomas composed wholly or mainly of cells resembling acidophile cells of the normal gland are associated

[1] Studies in Nutrition. An Inquiry into the Diet of Families in Cardiff and Reading. By E. P. Cathcart and A. M. T. Murray. Med. Res. Council Spec. Rep. Ser. No. 165. 1932. H.M. Stationery Office. Pp. 28. 6*d.*

[2] Midday Meals for Pre-school-children in Day Nurseries and Nursery Schools. By M. E. Sweeny and C. Chatfield. United States Dept. of Agriculture Circular No. 203. 1932. Pp. 45. 10 cents.

[3] See THE LANCET, April 9th, p. 782.

with the syndrome of acromegaly, or acromegalic gigantism. The more common chromophobe adenomas produce mainly signs of pressure on the optic chiasm and other neighbouring structures; apart from interference with sexual function their manifestations of endocrine disorder are not usually conspicuous and consist chiefly of slight obesity, loss of hair and certain other changes in the skin—a slight degree of the so-called "hypopituitary" syndrome. Mixtures of the acromegalic and "hypopituitary" syndromes occur, and, though further histological work with special methods of fixation and staining is necessary, it is probable that the adenomas that produce them are composed of mixtures of chromophobe and acidophile granular cells.

In all this work, around which has accumulated a vast literature, little notice has been given to pituitary adenomas composed of basophile cells. Two tumours of this type were described by J. ERDHEIM[1] in 1903, but they were extremely small and were looked upon as pathological curiosities without clinical significance. During the past 20 years cases of a curious polyglandular syndrome have been recorded by ZONDEK, PARKES WEBER, and others in which the hypophysis was found to contain an adenoma, probably or certainly basophile in type, but the authors did not regard the tumour as the cause of the syndrome. Recently, however, the claim has been put forward by HARVEY CUSHING[2] that the basophile pituitary adenoma is a tumour that produces profound and specific symptoms. CUSHING has collected 12 cases of a disorder which is characterised chiefly by a peculiar type of adiposity, sexual dystrophy, hypertrichosis, vascular hypertension, and extreme weakness. The excess of fat is confined to the face, neck, and trunk, the limbs being spared; and the skin, which is often very dry, takes on a dusky colour and presents numerous lineæ atrophicæ, so that many of the patients, both male and female, look as if they were pregnant. In some of them ecchymoses occur, in others pigmentation, and some have glycosuria and hyperglycæmia. The patients are all young adults, they complain of backache and pains in other regions and ultimately of extreme weakness, and they are apt to die of intercurrent infections, to which they show little resistance. Necropsy reveals chronic nephritis and cardiovascular hypertrophy, and often osteoporosis of the skeleton, most marked in the spine. Various changes are observed in the endocrine glands, such as cortical hyperplasia of the adrenals and atrophy of the ovaries and testes.

In three of the cases collected by CUSHING a basophile adenoma was found in the anterior pituitary lobe, and in three others an adenoma of unspecified type. In two of the verified cases the histological diagnosis was made respectively by such authorities as H. M. TURNBULL and E. J. KRAUS. In the third case the diagnosis was made in life by H. M. TEEL, a pupil of CUSHING, and the basophile adenoma was no more than 2·5 mm. in diameter and was only discovered by serial sections of the whole hypophysis. In some of the other cases the pituitary was said to be normal, but in the absence of serial sections this cannot now be regarded as conclusive evidence against a pituitary tumour. All the tumours were small and none of them gave rise to pressure on the optic chiasm.

In ascribing this syndrome to basophilic adenoma of the hypophysis CUSHING, as he freely admits, goes contrary to recent experimental work which suggests that the sex-stimulating hormone of the hypophysis is secreted by the basophile cells. If this view be correct it would not be expected that tumours of basophilic cells would produce atrophy of ovaries and testes, as has in fact been found. This question must await solution, but all clinicians and morbid anatomists will agree that in endocrinology observations on the human subject should always be preferred to those on animals, and should indeed be marshalled in judgment of the application of experimental work to clinical concepts. The facts gathered together in this paper establish a fairly strong claim that in some of the cases, but not in all, the syndrome described was due to basophile adenoma of the hypophysis. Many will doubt, however, whether the syndrome is specific, in the sense that the syndrome of acromegaly is now known to be due only to an acidophile adenoma of the hypophysis. Two cases of pluriglandular disturbance were recently carefully described by O. LEYTON, H. M. TURNBULL, and A. B. BRATTON[3] and in these the causal lesion appeared to be a carcinoma of the thymus. In both cases there was adiposity of the face and trunk, and glycosuria. The second case especially resembles most closely some of CUSHING'S cases, not only in external appearance, symptoms, and death from infection, but also in the necropsy findings of cardiovascular hypertrophy, hypertrophy of the cortex of the suprarenal bodies and of the thyroid gland. It is interesting to note that CUSHING refers briefly to a case described by WIETH-PEDERSEN, of Copenhagen, in which what was evidently a somewhat similar syndrome was found in association with a malignant adrenal tumour. In view of these cases the specificity of the syndrome described must for the present remain in doubt, but not, it is to be hoped, for long; for CUSHING'S paper should stimulate clinicians and pathologists alike in their efforts to disprove or substantiate his claim.

[1] Beitr. f. Path. Anat. u. Path., 1903, xxxiii., 158.
[2] Bull. Johns Hopkins Hosp., 1932, l., 137.
[3] Jour. Path. and Bact., 1931, xxxiv., 635.

HOSPITAL CONTRIBUTORY SCHEMES AND ANNUAL SUBSCRIPTIONS.—The Birmingham and Midland Ear and Throat Hospital reports that the contributory scheme was its chief source of income for 1931, annual subscriptions having fallen considerably since the institution of the scheme which, owing to a new method of allocation, contributed £1356 less than in 1930. In-patients numbered 1195, an increase of more than 10 per cent., and the average stay was 12·88 days. In addition, 623 patients were, by arrangement, admitted to St. Chad's Hospital. There were 8575 out-patients, a decrease of 500. It is pointed out that the resources of the hospital are "quite unequal to cope with the work," and an up-to-date building is declared to be "imperative."

ANNOTATIONS

ROBERT BOYLE.

A DELIGHTFUL book[1] about "that pious admirable Christian, excellent philosopher, and my worthy friend, Mr. Boyle" as John Evelyn calls him in his diary, has been written by Prof. Fulton as a contribution to the *Proceedings* of the Oxford Bibliographical Society. We wonder how many people know Robert Boyle's claims on the gratitude of the scientific world. He was one of the outstanding figures in the history of science, an ardent experimenter and a prolific writer. He made a greater number of variety of discoveries than perhaps any one man will ever make again; weighing the air, the thermometer, the barometer, freezing mixtures, the gas laws, chemical elements, phosphorescence, electricity are all intimately associated with his name. And between 1659, when he published "Seraphick Love" and 1695 when "A free discourse against swearing" appeared, about 40 books of his were printed as well as a number of papers for the Philosophical Transactions of the Royal Society; he had written also a considerable mass of manuscript which was destroyed in 1688 by the breakage of a bottle of sulphuric acid. He was not a good writer—discursive and not always very clear, and his contemporaries made fun of his prolixity; his arguments were not improved by his habit of making considerable additions and alterations when his books were half printed. But his public preferred his matter to his manner, and he must have been widely read, for many of his works went into several editions in English with latin versions for continental consumption. His scientific works are more or less well known—"The Spring and Weight of the Air," "The Sceptical Chymist," "The Relation between Flame and Air," &c.—though they still wait a detailed synthetic examination in the light of modern knowledge. But his general and theological writings are unfamiliar, and there are a good many of them. "Occasional Reflections" is a volume of essays or sketches of country life in Dorset; "Seraphick Love," a treatise on sacred devotion with some remarks on the profane sort; "The Excellency of Theology" rebukes his scientific friends for their rationalistic outlook; in "Possibility of the Resurrection" he considers what can happen to a man who has been eaten by a cannibal. In the appendix is a list (1692–1929) of those who have preached the annual sermons which he endowed "for proving the Christian Religion against notorious infidels—viz., Atheists, Theists, Pagans, Jews, and Mahometans, not descending lower to any controversions that are amongst Christians themselves." He also provided the funds for an Irish translation of the Bible and promoted a scheme for a Turkish version. Prof. Fulton, whose work is published in the *Proceedings* of the Oxford Bibliographical Society (iii., pt. 1) as well as in book form, ends with a catalogue of Boyle's elegies and biographies, though we cannot discover whether there really is a monument somewhere which describes him as "the Father of Chemistry and the nephew of the Earl of Cork."

The *Proceedings* of the Oxford Bibliographical Society, with its headquarters at the Bodleian, are issued annually to members of the Society, and copies of this part, we understand, may be obtained at 10s. each through a member of the Society. An off-print of Prof. Fulton's charming essay has been made for the author, for presentation purposes.

[1] A Bibliography of the Honourable Robert Boyle. By J. F. Fulton, M.A. Oxf., formerly Fellow of Magdalen College, Oxford. London: Oxford University Press. 1932. Pp. 172.

MODE OF ACTION OF VITAMIN D.

IRRADIATED ergosterol, when given in large doses to animals, causes a marked hypercalcæmia. The mechanism by which the hypercalcæmia is produced is not completely understood. There is dispute indeed over the important question of the source of the excess serum calcium. Does the parathyroid mechanism play a part? Jones, Rapoport, and Hodes (1930), Harris (1930), and Dixon and Hoyle (1928), conclude that the excess serum calcium which follows vitamin D overdosage is derived from the food, and that the vitamin increases absorption from the gut. In their last work Harris and Innes (1931) state that the excess calcium of the serum may be derived from the bones provided that the dosage of irradiated ergosterol is sufficiently large and the amount of the ingested calcium is inadequate. In face of the reports of many workers as to the effect of large doses of irradiated ergosterol in producing decalcification of the skeleton the view that vitamin D increases calcium absorption must be carefully scrutinised.

There is almost complete agreement between the chemical and morbid changes which follow the administration of large doses of parathormone and of irradiated ergosterol (Taylor, Weld, Branion, and Kay, 1931). Further, several workers have demonstrated that large doses of the parathyroid hormone cause decalcification of bone. Harris and Innes (1931) state that bone calcium is the sole source of the extra calcium resulting from parathormone administration, but draw a distinction between the action of the hormone and of irradiated ergosterol when they conclude that the latter but not the former increases calcium absorption. Having in mind the work of Hunter and Aub (1927) concerning the effect of parathormone upon the excretion of lead, Taylor and Weld[1] set out to determine whether or not irradiated ergosterol had an effect comparable to parathormone in ridding the body of lead. Cats were given daily, up to fifteen days, 15 mg. of lead acetate in solution. The dose was delivered by a syringe into the back of the mouth. A period of three weeks was allowed to elapse before administering the irradiated ergosterol in order to permit the daily excretion of lead by the bowel and kidney to reach a steady level. The administration of large doses of irradiated ergosterol at the end of this time caused the excretion of lead in the urine to mount rapidly and in some instances to increase by several hundred per cent. The fæcal excretion of lead showed little change. The appearance of large quantities of lead in the urine, and the increased urinary excretion of calcium under the influence of vitamin D indicate that the urinary lead and the associated calcium are derived from the bones rather than from the intestinal tract.

Dr. Harris in our last issue contends that the available evidence indicates rather that the parathyroid secretion and vitamin D normally function separately and independently, their effect on the blood calcium or phosphorus being only supplementary. He points out that it must be borne in mind that most past work on parathyroid function has been carried out on adult animals, sometimes on calcium-free diets and principally with very large overdoses of the hormone. The conditions, there-

[1] Taylor, N. B., and Weld, C. B.: Brit. Jour. Exper. Path., 1932, xiii., 109.

fore, have not been comparable with those employed in investigations of the action of vitamin D. He holds that the occurrence in common of such abnormalities as calcareous deposits in soft tissues and high urinary calcium, which is also used as an argument for the supposed identity of hyperparathyroidism and hypervitaminosis, could be accounted for as readily by regarding them as a necessary feature of the hypercalcæmia per se, brought on independently by the two disorders.

FUNCTIONS OF THE CAROTID BODY.

SOME important discoveries concerning the carotid body are described by Prof. D. Danielopolu, of Bucharest, and collaborators.[1] By observation and experiment on human beings and animals they have succeeded in showing that the carotid reflex is (as they express it) amphotropic in action; that is to say, its effect may be pressor, depressor, or dissociated, the reflex being produced via the two antagonistic groups, the predominant effect being on the inhibitor. This information should help to explain the conflicting results observed in experimental work and in pathological conditions affecting the carotid body. It was Czermak who first found that compression of the vasculo-nervous bundle in the neck produced a slowing of the heart-beat, and Danielopolu who in 1920 pointed out that although the vagus was accessible to compression throughout its course in the neck yet the slowing effect was only obtained by direct compression of the carotid ganglion. In 1923 Hering showed conclusively that this cardiac effect was not a vagal effect, but a sino-carotid reflex; but he regarded the reflex as purely pressor in action—a parasympathetic stimulation. It was not until the results of the research of Danielopolu and Proca in 1924, and Danielopolu, Marcu, and Proca in 1927 were made known that it was realised that compression of the carotid ganglion produced a simultaneous stimulation of both the parasympathetic and sympathetic systems, and that the normal condition of tone of the carotid ganglion reflex was depressor—that is, the inhibitor action predominated in the two antagonistic effects. And further that in pathological conditions such as lesions of the heart, vessels, or nerves because of the modification of the tone of the vegetative system, the reverse result might be observed—namely, an excitation effect as a result of the predominance of the sympathetic. This latter result, which had been noted even in normal subjects, could never be explained on Hering's conception, but was easily understood if the hypothesis of amphotropism was accepted. Danielopolu and his colleagues now describe a number of experiments in proof of their hypothesis, and one of these may be quoted. In 1927 they published the fact that excitation of the carotid ganglion had an influence on the cerebro-spinal system in some subjects, and could produce convulsions. On this finding it was suggested that bilateral section of the nerve-fibres running to the carotid ganglion should be practised in cases of epilepsy, and this was done in three cases. The researches of Hering, confirmed by other workers, had shown that section of the nerve supplied by the glossopharyngeal to the ganglion produced a condition of tachycardia and chronic hypertension. If the carotid ganglion affected solely the parasympathetic system, and all the nerves running to it had the effect of the nerve of Hering, then bilateral section of all nerves should have produced the same effect as section of the nerve of Hering—namely, a tachycardia and a chronic hypertension. This, however, was not found to be the case, for in the three epileptics in whom this section of all the nerves was done, the tachycardia and hypertension did not develop. The absence of these phenomena constituted a further proof of the amphotropism of the tone of the carotid ganglion reflex.

[1] Danielopolu, D., Marcu, I., Proca, G. G., and Aslan: Presse Méd., March 30th, p. 489.

REFLEX ACTIVITY IN THE NEW-BORN.

OF late years the objective study of infantile behaviour has brought to light many new facts; but their interpretation is beset with difficulties. One of these is that the neural mechanisms of the young infant are so labile that the reactions of each individual may alter considerably in a short period. In an investigation conducted at the Normal Child Development Research Clinic of the University of Pennsylvania, by Dr. Beverly Chaney and Dr. Myrtle McGraw,[1] an attempt has been made to estimate the variations which take place in the first few weeks of life, by comparing the reactions of a group of infants in the first few minutes after birth (referred to as partunates) with those of another group none of whom were more than ten days old (neonates). The authors also endeavoured, by recording the infants' responses in detail, to throw some light on the remarkable diversity of opinion expressed by different observers on certain reflexes, particularly the plantar, in infancy. All the infants examined were passed as in "good normal condition" by the accoucheur. The first group of 25 partunates was examined immediately after division of the umbilical cord. The various events in the delivery were previously timed and recorded, in case the duration of any of them might be correlated with a particular effect upon the infant. The reactions which were examined comprised the deep and superficial reflexes; sucking, grasping, blinking; pupillary reflexes and certain postural reflexes. A maximum of five successive stimuli was given for each reflex, and if no response was elicited by them it was regarded as absent. The most striking fact emerging from comparison of the two groups is that a larger percentage of deep reflexes was obtained from the partunates than from the neonates, whereas a much larger percentage of superficial reflexes was obtained from the neonates. Chaney and McGraw remark, somewhat paradoxically, that "most partunates were in a state of general muscular hypotonia, and this seemed to facilitate responses to tendon stimulation." The abdominal reflexes were present in a third of the neonates, but in only one partunate. As a general rule there was only a slight tendency for the responses to increase with successive stimuli; it appeared that repetition did not materially increase the probability of a response. The plantar reflex was studied in great detail, no less than 16 modes of response being observed and recorded. Plantar flexion of the toe was rarely seen. While a typical Babinski reflex was not often seen, dorsiflexion of toes in combination with other movements was the rule in both groups. In the neonates some form of dorsiflexion was present in 96 per cent. of cases. Sucking reflexes, elicited by inserting a rubber nipple into the mouth, were present in all but one of the neonates, but in only 16 per cent. of the partunates. The typical response of the latter was a biting movement of the jaw. A very significant

[1] Bull. Neurol. Inst. New York, March, 1932, p. 1.

difference between the groups was found in the grasping reflex, which was poorly developed in the partunates. A perceptible grasp was only recorded in 28 per cent. of the latter, as compared with nearly all of the neonates. The investigators draw attention to the variability of all reflex responses in the new-born, the variation increasing with the complexity. On the other hand, in those which have become established, such as the plantar reflex, there is nearly always a response of some kind, and its total absence should suggest a pathological condition.

These experimental studies are of considerable interest to the pædiatrist, and support the common medical experience that the nature of reflex responses in young infants is of little clinical significance. They also suggest that there is nothing more than a superficial resemblance between the normal infantile responses and the pathological responses met with in adults.

CINEMATOGRAPHY OF MENTAL DEFECT.

THE comprehensive system of still photography in use at the Fountain Mental Hospital is now being supplemented by cinematography, with its obvious advantages for the recording of movement, expression, and gesture. The films shown by Dr. Noel Burke to the Section of Psychiatry of the Royal Society of Medicine on May 10th represented the first prints of the method as used at the hospital and they fully proved its value in the demonstration of various forms of mental defect. The first was a study of movements made by the younger defectives of the lower grades. Examples were shown of the simple movements, such as grimacing, head-rolling, and body-rocking, leading up to quite complicated movements of head and hands and body. These restless cases were contrasted with two children who sat apathetic and almost motionless throughout the exposure. The next film was in two parts, and gave a detailed study of each type of defective, showing the essential physical features and the behaviour peculiar to each. It began with pictures of some score of mongolian imbeciles, both singly and in groups and continued with examples of microcephaly, hydrocephaly, nævoid amentia, and nodular sclerosis. The second part was devoted to neurological cases, and showed identical twins with the same ophthalmoplegia, a full study of a case of torsion spasm, and others of diplegia, athetosis, and post-encephalitis. The last film, of treatment and training, showed the various stages of education of manual ability, leading up to useful hand-work, and of combined movements leading to complicated action dances and group behaviour. The band, formed of high-grade patients from the Darenth Training Colony, was seen playing to the children and adults of the Fountain Hospital, who responded with evident pleasure by attention, rhythmic movements or actual dancing. A picture of a summer fête, with Punch-and-Judy show and the children dancing, swinging, receiving presents, wearing paper caps, and blowing toy trumpets, concluded the demonstration. In the subsequent discussion, Dr. A. F. Tredgold called attention to the suggestive similarity between some of the movements shown in the first film and those typical of dementia præcox. He believed that the latter condition and mental deficiency were closely related. Both he and Dr. Letitia Fairfield discussed the occurrence of so-called mongolian characteristics in normal people, and their tendency to disappear in defectives of this type who reach mature years. Dr. Fairfield had noticed that the nævoid cases seemed to be affected always on the right side. She also commented on the happy appearance of the patients shown in the film, as well as of their nurses, and on the improvement that proper care had produced compared with the conditions she had previously seen when certifying the same children. Dr. R. M. Stewart spoke on a number of details arising from the demonstration, and gave some suggestions to explain the movements that had been shown on the screen. Lastly Sir Robert Armstrong-Jones recalled his long experience at Earlswood, and discussed the difficult problem of the borderline child who is seen in the children's courts and thence referred for an opinion on the mental factors in his case.

THE DETECTION OF ADDED WATER IN MILK.

THE report of the Lancashire public analyst, Mr. G. D. Elsdon, for 1931 shows that great care is observed in that county to play fair by milk vendors. It has taken some 60 years, says Mr. Elsdon, to provide the methods capable of solving this problem and, if it is not now actually solved, we are at any rate in a very much better position to give an opinion than when the Sale of Food and Drugs Act was passed in 1875. It will be recalled that there is no legal standard for genuine milk, but that, according to the Sale of Milk Regulations, 1901, any milk which contains less than 3 per cent. of fat or 8·5 per cent. of solids-not-fat is presumed, until the contrary is proved, to be not genuine. All that the regulations do is to enable the prosecuting authority to describe such a milk as adulterated and to put the onus of proof to the contrary on the defendant. A milk which contains less than 8·5 per cent. of solids-not-fat is not necessarily adulterated and one which contains more than 8·5 per cent. is not necessarily genuine. This is readily appreciated when we read that the average of all the 59,118 samples, including those adulterated, taken in Lancashire during the last 22 years showed 8·89 per cent. solids-not-fat, whilst 180,000 samples in other districts averaged 8·86 per cent. In the case of all deficient milks in Lancashire an appeal-to-cow sample is obtained before going into court and records of these appeals, which are available since 1903, show that the proportion of total milk samples naturally deficient in solids-not-fat has been only 1 in 480. The appeal to the cow has been invaluable in separating naturally deficient from watered milks. The latest addition to the means of securing justice as between producer and consumer is the freezing-point test. It has been found that the freezing-point of genuine milk is its most constant known property, being depressed below 0° C. by about 0·54°. Thus the average depression of the freezing-point in 211 genuine milks examined in the county laboratory during the last three years was 0·543° and no genuine milk has ever had a value below 0·530°. Among 60 appeal-to-cow samples taken in 1931 the least depression was 0·536°. Mr. Elsdon considers that, though the average depression for genuine milk is above 0·540°, no sample should be considered as watered on the evidence of the freezing-point alone, unless the value falls below 0·530°. In several cases during 1931 an appeal-to-cow sample had apparently a freezing-point indicating added water, but in all an explanation was forthcoming. In one the sample was obtained on a dark morning with inadequate supervision and further samples, two days later, gave depressions of 0·547° and 0·549°; whilst in the others the test was the agent in dis-

covering a leak in the cooler. Mr. Elsdon sums up by saying that the indications of the test were never in doubt during the year. With practice and an apparatus, including standardised thermometers, costing about £15, accuracy, he says, to two-thousandths of a degree, which is more than sufficient for the purpose of detecting the addition of small percentages of water, can be obtained. He further states that the method is becoming increasingly popular amongst public analysts in this country and he enumerates countries abroad where it is used officially or semi-officially.

THE ROYAL SOCIETY'S CONVERSAZIONE.

AMONG the exhibitors at the conversazione of the Royal Society on May 11th, the laboratories of the Imperial Cancer Research Fund showed examples of vital staining. Fibroblasts of embryonic and adult tissue of the mouse, growing in vitro, segregate granules of trypan-blue, but cell death results in a diffuse staining. Sarcoma cells, on the other hand, do not segregate the dye, but take it up by active phagocytosis. This failure to segregate acid dyes, such as trypan-blue, appears to distinguish cancer cells from the cells of normal tissues, and the exhibit demonstrated this difference both in killed preparations of vitally stained cells and in living cultures of malignant and non-malignant cells. The killed preparations were post-vitally stained cultures to which trypan-blue had been added during life, and included mouse sarcoma, the filtrable tumours of the fowl, mammary carcinoma of the mouse, and tar carcinoma cells. The living cultures included similar tumours, and also the normal cells of *Salamandra maculosa* vitally stained with acid and basic dyes. With Dr. R. J. Ludford's generous explanations the preparations became intelligible even to those ignorant of cytology. Dr. W. Cramer and Dr. Ludford showed also a series of slides demonstrating the effect of radium on malignant growths. Experiments in mice show that when a radio-sensitive tumour of standard size is irradiated with a dose sufficient to produce its regression immediate inoculation of the tumour cells into fresh hosts will result in the development of new tumours. If the inoculation of tumour cells is not performed until several days after irradiation, no new tumours are produced. The tumours formed from the inoculation of a recently irradiated tumour, however, grow more slowly and show a lower percentage of "takes" than those obtained from the inoculation of non-irradiated tumours. The regression of a tumour after irradiation appears to be due to an injury inflicted not only on the tumour cells, but on the tissues of the tumour bed; the process of repair and fibrosis of the normal tissues plays an important part in the destruction of the tumour. This process was shown clearly in Dr. Cramer's collection of slides, while the action of radium on the actual tumour cells was demonstrated in another series of slides shown by Dr. Ludford. The immediate action on the tumour cell appears to be on the mitochondria, which become vesicular; mitosis is inhibited, but after a time the cells increase in size. With slowly growing mammary carcinoma this enlargement is great, and masses of secretion appear in the cells. With more rapidly growing tumours there is a wave of abnormal mitosis and ultimate degeneration.

The National Physical Laboratory, in an exhibit on the technical applications of X ray crystal analysis, included the result of an investigation into the crystalline structure of teeth. The enamel is almost entirely crystalline and the dentine contains crystalline material, the crystals in both cases being composed of apatite. In dentine the crystals are arranged at random, but in enamel they tend to have their axes parallel to each other. In dogs the axes of the crystals are perpendicular to the surface of the tooth, whereas in man the axes of the crystals are at an angle to the surface. It is possible that this may have some bearing on the greater durability of dogs' teeth, but this aspect has not yet been fully investigated.

Vitamins still have their place in the sun, and the National Institute of Medical Research was showing the method of production and the biological properties of calciferol (crystalline vitamin D). From the Lister Institute Prof. J. C. G. Ledingham demonstrated preparations to illustrate the association of elementary bodies with the lesions of vaccinia and fowl-pox, their agglutination by the serum of virus-infected bodies, and the presence of the same bodies in centrifugalised virus filtrates and virus cultures. Other exhibits included an interesting experiment made at the John Innes Horticultural Institution on the X ray treatment of *Primula sinensis*. Attempts are being made to induce chromosomal and gene mutations, and the inheritance of any induced abnormality is being studied. Samples of moistened seed treated with varying doses of X rays showed considerable somatic variation on germination. The Cambridge Instrument Company, Ltd., provided a smoke recorder, which differs from previous instruments in depending, not upon transmission, but upon diffraction of light from the dust particles, and which is held to be more accurate on that account. It is intended for use in chimneys, but it can be used equally well for air, and even for liquids, though this side has not yet been developed. Robert Hooke's hygroscope, an instrument—of which no original is known to exist—to show "the driness and moisture of ambient air," had been lovingly reconstructed by Mr. George H. Gabb. It depends for its action on the hygroscopic properties of the beard of the wild oat.

TRAFFIC IN DANGEROUS DRUGS.

THE advisory committee on traffic in opium and other dangerous drugs has reported to the council of the League of Nations on the work of its fifteenth session. Some 47 ratifications of the Geneva Convention of 1925 have now been deposited. The more recent Convention of 1931 for limiting the manufacture of narcotic drugs has been signed by some 45 Powers, and moreover, it has been ratified by the President of the United States. While the statistics of manufacture of morphine, heroin, and cocaine furnished by the several producing States show considerable reductions during the last five years, there is nevertheless a vast amount of illicit traffic still carried on. The United States delegate declared that "enormous quantities of opium and of manufactured drugs coming from Turkish ports had been seized in the States." Inasmuch as Turkey is about, at long last, to accede to The Hague Convention of 1912 and to the Geneva Convention of 1925, improvement is anticipated in illicit exports therefrom to Egypt, Europe, and America. It was stated by the Indian delegate that the area now under the poppy in India is but one-fifth of what it was in 1913 and that the export of opium for smoking had been reduced in 1930 to 4882 chests against 12,231 chests in 1919. It is anticipated that

such exports will cease altogether in 1935, and that the opium produced in India will thenceforth be used only for internal consumption and for transmission to England for medical and scientific purposes. The exports of opium from Persia appear to be greatly in excess of the certificated amounts; during the period from Dec. 1st, 1930, to Dec. 31st, 1931, some 4239 chests of opium, weighing over 300 tons, were exported from Bushire, sometimes in such a way as to "ensure that the loading of cargo should escape observation." In accord with resolutions passed by the Council and the assembly of the League the advisory committee, in conjunction with the secretariat, is drafting two questionaires dealing with the limitation of the cultivation of the opium poppy and the coca leaf, respectively, to be addressed to the producing countries of these raw materials from which most of the "dangerous drugs" are derived.

THE DIAGNOSIS OF ERYTHROMELALGIA.

Too little is known about the conditions associated with vascular disturbances in the extremities. We have not even a satisfactory nomenclature and the text-books are apt to dismiss the different types in a short sentence. G. E. Brown,[1] of the Mayo Clinic, believes that accurate studies of surface temperature in relation to subjective distress will allow of the separation of these disorders into two groups—those with and those without local vasodilatation. He has made a particular study of erythromelalgia, and he holds that this distinction is fundamental in diagnosing the disease; thus he says that the diagnosis is warranted only in the presence of increase of vasodilatation which parallels the degree of pain or distress, when the condition is bilateral and intermittent, and when there is no primary or associated disease which would provide an explanation. He found that with one exception his series of ten cases of "true primary erythromelalgia" exhibited four of the five basic signs originally described by Weir Mitchell. These were: bilateral burning pain in the extremities; sharp increase of local heat in the affected part with redness, flushing, or congestion varying in degree; production and aggravation of the distress by heat and exercise; and relief by rest, cold, and elevation. The fifth sign, non-amenability to treatment, had some exceptions, since application of radium sometimes gave relief; but whether this relief would be lasting it was too early to say. In connexion with the surface temperature of the affected limbs, Brown was able to establish the interesting fact that when the temperature reached 33° or 34° C. pain usually became evident; conversely relief came when the temperature fell below 33° C. Augmentation in arterial pulsation and in the rate of loss of heat gave further evidence of the high degree of dilatation of the arteries. Great stress is laid in diagnosis on excluding other types of cases suffering from excessive vasodilatation in the hands and feet—as, for example, Raynaud's disease where the underlying disturbance is vasospastic rather than vasodilator, and thrombo-angeitis obliterans, where there is a definite pathological change in the vessel walls. There is no doubt that these vasomotor dystrophies are of importance to those who suffer from them, and it is no exaggeration to say that they may give endless annoyance and discomfort and occasionally such severe pain as to make a patient's life a burden. One of Brown's series, a man aged 57, had suffered from a bilateral burning pain in the feet for 20 years and in the summer months got relief by walking all day in the wet sand on the banks of a river. Wearing shoes or otherwise covering the feet caused excruciating pain, and this patient committed suicide two years after he left the clinic.

[1] Amer. Jour. Med. Sci., April, 1932, p. 468.

EPIDEMIOLOGY OF MEASLES.

THE Health Section of the League of Nations have reviewed [1] the incidence and death-rate from measles in certain countries between the years 1919 and 1931. In most European countries 1929 was a year of light mortality, and in most of them, too, the mortality rose in 1930, though it did not exceed the average of the ten previous years. In measles, however—unlike small-pox and diphtheria for example—it is exceptional for many countries to show parallel mortality-rates. Each of them is undergoing alternating epidemics and "hypo-endemics," and the national differences between the maximum and minimum mortality-rates may vary considerably. In England the maximum is said to be three and a half times higher than the minimum, in Germany the proportion is 5 to 1, and in Scotland and Denmark it is 17 to 1. The smaller the population the larger, as a rule, the difference, because in countries with larger populations there is a relative compensation between the operation of hypo-endemics and epidemics. A seasonal influence is observable both in incidence and mortality; thus a graph illustrating the incidence of measles in Denmark shows that the minimum mortality is regularly in September. In most countries where measles is endemic the maximum incidence is observed at the end of winter and in spring. Between 1926 and 1931 92 per cent. of the annual maximums of morbidity registered in 18 countries was between December and May, and only 8 per cent. between June and November. In Spain, Portugal, and Egypt, and less clearly in Mexico, the maximum mortality tended to be during the hot season, while in the countries of eastern and northern Europe, which have a severe winter, the rise in the mortality- and morbidity-rates took place in November and December—earlier than in most European countries. As might be expected, in view of the time which the complications of measles take to cause death, the mortality curve shows a slight lag behind the incidence curve—a lag of about three weeks. Thus morbidity reaches its maximum in most countries in March, and mortality in April. The variation during the year in the case-fatality rate amounts only to about 1 per cent. The mortality-rate from bronchopneumonia runs a course strikingly parallel with the mortality-rate from measles. It is about a month in advance of the measles curve, reaching a maximum in March and a minimum in August. If the case-fatality rate of measles is calculated from the number of cases notified during one month and the number of deaths during the following month, it is evident that measles takes a graver form when bronchopneumonia is more prevalent. Carriers of streptococci and pneumococci run a greater risk than other people.

[1] League of Nations Monthly Epidemiological Rep., 1932, No. 2, p. 47.

MEMORIAL GARDEN, ST. BARTHOLOMEW'S HOSPITAL. Miss Peggy Salaman last week opened a memorial garden presented to the nurses by Sir Herbert and Lady Cohen in memory of their son Nigel, a student at the hospital, who was killed while flying.

SPECIAL ARTICLES

REDUCTION OF MARRIED WOMEN'S SICKNESS AND DISABLEMENT BENEFITS.

By Mabel L. Ramsay, M.D., F.R.C.S. Edin.

Twenty years' experience of the working of national health insurance has at last revealed certain truths that might have been anticipated from common knowledge—i.e., that it was to be anticipated that the sickness-rate amongst women workers would be greater than amongst male workers for the reason that a certain large percentage of the women workers would be married. Marriage for the male worker usually means that his health is better looked after than before marriage. To the woman worker marriage adds to the usual illness of single life its own duties plus those of pregnancy and diseases associated thereto.

Hence I feel it was a wrong policy from the start to base an insurance scheme for women on a lower weekly premium than for men, even if the men's fund bears, as it does, the cost of maternity benefit. A business insurance company to-day charges for an all-sickness policy terminable at 65 at least 25 per cent. more to a professional woman, and excludes illness associated with pregnancy.

MORBIDITY STATISTICS AND THEIR LESSONS.

The Government Actuary, in his report [1] on the financial provisions of the Bill now before Parliament, shows a continuous rise in sickness claims from 1921 to 1927 (due no doubt to post-war depression) which have exceeded the provision made in the estimate by 17 per cent. for unmarried and by 30 per cent. for married women. Disablement claims for the same period showed an excess of 19 per cent. for unmarried and 71 per cent. for the married. Taking all societies together an additional sum of £850,000, not covered by insurance premiums, has had to be found by the Treasury—namely, for unmarried women, £430,000, for married women, £420,000. At the last valuation the numbers of unmarried insured women were given as 4,293,000, those of married insured women 1,132,000. Each individual unmarried woman has cost the fund 2*s*., and each married woman 7*s*. 6*d*. more than the estimate. Hence, Sir Alfred Watson proves quite easily that insured women as a class are receiving more than the insurance premium received can pay for.

In January last a report was issued by the Department of Health for Scotland, setting out a morbidity statistics scheme which is well worth perusal. This report states that statistical examination of doctors' certificates issued in nearly every area shows a well-defined grouping of practitioners round the area average, with a few practitioners conspicuously outside the group. This would appear to indicate a fair measure of consistency in the certification methods of practitioners with panels similarly constituted. Certain facts emerge from an analysis of the figures collected during the year July, 1930–31. In this year the incidence of incapacity in single women was equal to that found in men, but married women are certified as incapable of work twice as frequently as men or single women. Duration of illness irrespective of cause in married women is 36 per cent. higher than that for men. The average duration of illness for single women is also in excess of men by 21 per cent. Twenty per cent. of the whole sickness loss is attributed to pregnancy and its associated conditions or complications. In both men and women incapacity for work is relatively most frequent at ages under 20 years. The average duration of certified illness which began and ended was 25·95 days, and this does not cover chronic illness. The illnesses most frequently recorded were of a minor character—e.g., affections of the upper respiratory tract, accidents, and influenza, each of which accounted for 10 per cent. of the total. Inflammatory and suppurative conditions of the skin, gastritis, and bronchitis each accounted for another 5 per cent. of recorded incapacity.

Certain facts emerge from the two reports quoted above. That, with few exceptions, doctors' certification cannot be called to account; that claims for so-called minor ailments cause an average of 25·95 days' incapacity. Doubtless the earlier reference of a number of these cases to the regional medical officer would result in a shortening of duration of incapacity. Possibly a change of definition might assist: "total incapacity" rather than "incapable of work"; but definitions are difficult to render exact and intelligible to those who have to use them. Some blame has been attributed to doctors for certifying too easily, but this has not been proved. The doctor desires to be fair to both sides, patient and funds, and there is quite a large amount of evidence that he has had a great increase in his insurance work, treating a number of minor ailments which were never treated by any doctor prior to inception of national health insurance. As a corollary, if more persons are being treated more certificates will undoubtedly be given for a discovered incapacity for work.

POSSIBLE SOLUTIONS.

Now the day of reckoning has come, and Sir Alfred Watson suggests in the case of insured married women that the weekly rate shall be reduced from 12*s*. to 10*s*. for sickness benefit, and from 7*s*. 6*d*. to 5*s*. for disablement benefit, and even then that an extra halfpenny a week shall be paid by *all* insured women.

Some would suggest instead to take all married women workers out of the national scheme. But this I would deplore, for the central aim of the scheme is to maintain as far as possible the efficiency of the worker by securing early medical treatment, and thus preventing more serious disability. But, alas, the married woman worker has now got to realise that her proved incapacity amounts to too serious a charge on the funds; and that in fairness to the single woman and male worker some plan of collective responsibility must be devised. It would be possible either (1) to increase all women's insurance premiums, or (2) to reduce the benefits of the married. As the married woman secures the greatest percentage from maternity benefit, and a widow's pension (if her husband is insured), she really cannot grumble if her cash benefits are reduced slightly; for her sickness-rate associated with pregnancy lays a heavy charge on the funds.

If later on some of the surpluses of all the approved societies could be secured by way of additional benefit it might be a way to secure the retention of the benefits as paid to-day. But as the Act stands these

[1] National Health Insurance and Contributory Pensions Bill, 1932. Report by Sir Alfred Watson. H.M. Stationery Office. Cmd. 4073. 2*d*.

surpluses belong to individual well-managed societies, and the moneys can only be used in approved benefits for members of those societies. To do other would mean a change in the basis of the scheme whereby the place of the approved societies as the collecting and distributing agencies should be taken by a more central and possibly more bureaucratic method, so that all insured persons secure a share in such additional benefits as are provided by the surpluses.

My conclusion from this survey is that the National Health Insurance Acts provide a contributory scheme which has to be kept solvent. It is not a charitable fund, and no contributor can expect to get other than fair and equitable treatment. A minority of 1,132,000 married insured women must not be allowed to get more than their fair share of benefits under the present scheme. The unmarried woman will be called upon also to pay an additional halfpenny a week, partly because she also has a higher incapacity than the male worker, and partly because, even though classified as unmarried, she also does cause increase of claims when she herself suffers from diseases associated with pregnancy.

A CONFERENCE ON RADIUM.

THE following account of the origin, conclusions, and outcome of a recent conference on radium has been submitted to us:—

This Conference owed its origin to doubts emphatically and publicly expressed as to whether the policy of the Radium Commission was in certain respects mistaken, and, in particular, whether its decision to convert the existing single unit (in use at the Westminster Hospital) of 4 grammes of radium into four units of 1 gramme each was sound. There were present:—

Lord Dawson of Penn, President of the Royal College of Physicians, in the chair.

Lord Moynihan, President of the Royal College of Surgeons.

Mr. Wilfred Trotter, representing the Medical Research Council.

Sir Frederick Menzies, Chief Medical Officer, L.C.C.

Dr. Watts Eden, President of the Royal Society of Medicine.

Mr. H. S. Souttar, representing the B.M.A.

Prof. Arthur Hall, Mr. Ernest Miles, and Prof. Woodburn Morison, representing the Radium Commission.

The Conference first considered a memorandum, the salient portions of which are as follows:—

"What this Conference can usefully do is to consider how far the Radium Centres within the purview of the Radium Commission with their equipment, measures, and men and available funds are at the present time suitable places for the use of the 4-gramme bomb.

It is impossible to avoid the conclusion that the benefits from the bomb to patients under conditions existing in the Westminster Hospital have been problematical; that the use of the bomb is at present experimental, involving considerable outlay of money, and that the Westminster Hospital, which exists primarily for treating the sick poor, does not consider it justifiable to employ its funds in the prosecution of this piece of experimental medicine.

When the Conference has heard the evidence on which this conclusion is based it may or may not agree with this conclusion, which would not involve condemnation of bomb therapy as such.

But does it not bring us to this conclusion—namely, that the testing out of new methods of radium therapy, e.g., surface radiation and other similar problems, requires a special institute staffed by skilled radium therapeutists?

England is in serious need at the present time of such a fully equipped radium institute and equally is in need of more skilled radium therapeutists.

At the present time we are at serious disadvantage compared with, for example, Sweden, France, Belgium, &c., each of which countries possesses a radium institute well equipped and staffed. Our present deficiency in men and means is accounted for by the straitened condition of the national finances.

The hospitals of this country are having grave difficulty in maintaining their present standard of work and have no money to institute new services."

The Conference next considered written and oral evidence, and then after full discussion unanimously passed the following resolutions:—

(1) That in view of all the circumstances, this Conference is of opinion that the Radium Commission arrived at a sound conclusion in discontinuing the use of the 4-gramme bomb at the present juncture, though this decision is without prejudice to the question of the therapeutic value of 4-gramme or even larger aggregations of radium.

(2) That in the opinion of this Conference a fully equipped radium institute is needed in London where the more difficult and speculative problems connected with radium and ray therapy can be studied by the combined efforts of a trained staff.

The Conference was in agreement with the Radium Commission that a scientific inquiry on certain aspects of the radium problem would be of value, and after discussion unanimously passed the following resolution:—

(3) That in the opinion of the Conference an expert committee should be appointed with the following references:—

1. What is the scientific case for mass radiation by radium, and what are the advantages and dangers attaching to the use of such radiation?

2. What are the advantages and risks of massive surface radiation by radium compared with those of radium needles and radon seeds?

This committee to obtain any evidence and seek any information which it may think necessary; *its proceedings to be private and its report to be made to the Conference.*

The following is the constitution of this technical committee:—

Lord Dawson of Penn, P.R.C.P.

Lord Moynihan, P.R.C.S.

Chairman.—Mr. Henry Souttar.

Physics.—Lord Rayleigh, F.R.S., Prof. J. C. M'Lennan, F.R.S.

Radiotherapy and Medicine.—Dr. Roy Ward, Radium Institute; Dr. G. F. Stebbing, Lambeth Hospital, L.C.C.; Dr. B. W. Windeyer, Middlesex Hospital.

Surgery.—Mr. Cecil Rowntree, Cancer Hospital; Mr. Geoffrey Keynes, St. Bartholomew's Hospital.

Gynæcology.—Mr. Louis Rivett, Middlesex Hospital; Dr. Elizabeth Hurdon, Marie Curie Hospital.

Experimental Radiation.—Dr. W. Cramer, Imperial Cancer Research Fund Laboratory.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

THE SWEEPSTAKES AND TAXATION.

IT was hardly to be expected that the large sums of money reaching Ireland in connexion with the sweepstakes would not, sooner or later, excite the envy of some Minister for Finance, and, therefore, it was no surprise when the new Minister, who is

seeking for money wherever he can get it, and probably in some places where he cannot, announced his intention of making a swoop on the receipts from the sweepstakes. It had been rumoured in advance of the Budget statement that it was proposed to impose a tax of from 5 to 15 per cent., according to different stories, on the gross receipts of the sweepstakes. What is to be done is something different, although the precise procedure is still uncertain. The statement made in the Dáil by the Minister was :—

"I shall have to turn to the proceeds of the sweepstakes. I have had to consider many proposals in this regard. They were rejected in favour of one which was submitted by the emergency committee of the hospitals, and which outshone all others in its attractive simplicity. I propose to levy 25 per cent. on the hospitals' share of the proceeds of all sweepstakes drawn after March 1st, 1932. This, I hope, will bring in not less than £650,000 this year. In view of this change in the original scheme of the sweepstakes I propose to ask my colleagues on the Executive Council to reconsider the present allocation between public and county hospitals of the proceeds of the sweepstake."

What is not clear is whether the proposed levy is to be a special tax or the ordinary income-tax. The proposal of the committee of the sweepstakes to which the Minister agreed was that the hospital receipts from the sweepstakes should be subjected to the ordinary rate of income-tax. Their reason for this is said to be that they fear that a statement on the face or back of the ticket that the receipts were subject to a special tax would interfere with the sale of tickets. But in the Minister's statement there is no reference to income-tax. Moreover, although the rate of income-tax imposed in the present Budget is 5*s.* in the pound, or 25 per cent., the tax during the last half of the previous financial year, into which the drawing in March falls, was only 3*s.* 6*d.* in the pound. The Minister can hardly intend to make the new tax retrospective, particularly in regard to an income which had been specifically exempted from taxation by previous legislation. There is a good deal of difference of opinion among those interested in the hospitals as to whether a special tax or the ordinary income-tax is the less dangerous method of procedure. While it is recognised that the announcement of a special tax may affect the sale of tickets injuriously, there is a grave objection to establishing the precedent of imposing income-tax on hospital revenues. Hitherto the income of a hospital as a public charity has been exempt from income-tax, and it is feared that a future Minister may regard as a precedent for taxation of the ordinary income of a hospital the taxation now to be imposed on income from a special source.

THE BUDGET AND MEDICINE.

Apart from the tax now to be imposed on the sweepstakes' funds the new Budget touches in other respects on the interests of the public health and on the working of the medical profession. It is proposed to make a sum of £5,000,000 available for building. On the other hand, however, the costs of building are likely to be greatly increased by the new duties which will press specially heavily on builders' materials. Again, a sum of £100,000 is to be provided for the supply of milk to poor children. The application of the entertainments tax to physical exercises, games, and athletic sports will interfere with the pursuit of these means to health and physical efficiency. Some years ago the legislature recognised the educational and hygienic value of open-air sports, and exempted them from the entertainment tax. The fresh imposition of it is a retrograde step. One of the new duties—the "package tax," a tax of 2*d.* on every parcel or packet or bottle ready for sale which enters the country—is likely to cause grave inconvenience in medical practice. The Minister states that his object in imposing this tax is, in the first instance, to raise revenue, and, in the second, to increase employment by causing the packing or parcelling to be done in the Irish Free State. He overlooks that the label on a closed packet or bottle is a guarantee that the article is the product of a particular maker. In future, the purchaser must either forego this guarantee or pay 2*d.* for it each time. The tax will certainly increase the price of proprietary preparations appreciably.

BUDAPEST.

(FROM OUR OWN CORRESPONDENT.)

UNQUALIFIED PRACTICE IN HUNGARY.

In the present depressing conditions it is not to be wondered at that the profession is eager to track out all factors that may damage medical practice. The Hungarian law prohibits unqualified individuals from treating patients for gain, and from carrying on such practice as a breadwinning occupation. This definition is not satisfactory, for unqualified persons can evade it by engaging qualified physicians to work with them, or by other means. The Minister of Public Welfare, in view of the great increase in unqualified practice, has recently asked that the law should be tightened up, and that offences against it should be dealt with in the higher courts instead of, as now, by magistrates. The Minister of Justice did not make this change, but he has instructed magistrates to deal more severely with proved cases of overt breach of the law. A more difficult problem is that of the pharmacist-prescriber. Pharmacists are entitled to make up compounds according to medical prescriptions, and to sell drugs asked for by customers by name—for instance, aspirin, camphor liniment, or tincture of iodine. But if a customer asks for "something for" headache, or heartburn, or pain in the back, and the chemist sells him pyramidon, milk of magnesia, with perhaps the addition of belladonna, he commits an offence. A pharmacist must not explain the directions given on the use of drugs, and still less may he answer questions put by customers on the kind of life they ought to lead when taking certain drugs. If this enactment were strictly applied, hardly a single chemist would escape punishment. The medical profession tacitly acknowledges that right of the public to buy household remedies from the chemist, without consulting doctors. But it raises objections against the practice which nowadays is quite common whereby a patient actually consults the chemist and takes his advice and medicine. A chemist may prescribe and dispense, say tinct. opii, for a patient who comes complaining of abdominal pain ; if the drops do not cure the pain the chemist suggests some narcotic tablets. This is the sort of case in which the doctor may be called in at a late stage to establish a diagnosis of perforated appendicitis. The chemist who is reported for prescribing remedies for gonorrhœa, chronic eczema, varicose ulcers, and hæmorrhoids, is fined so little if the charge is proved that it pays him to continue this practice. The Society of Physicians of Leopold City, a district of Budapest, have brought up the matter, with some notable examples, in the hope that action will be taken in the matter.

THE INFLUENZA EPIDEMIC.

This year the influenza epidemic presented itself considerably later than in former years. While its usual advent in Hungary falls in the second half of January, this year it appeared in the second third of February. The epidemic was unusually widespread, the number of cases being very large, particularly in late February and early March. In some houses almost all members of the family contracted the disease. Schools and some offices had to be closed. The Budapest Court could not hold sessions because three-fourths of the judges were in bed. Fortunately the majority of cases were mild, and passed off without serious complications. Of the latter, bronchitis and indigestion were most frequent. The mortality was fairly low. In Budapest, at the height of the epidemic, there were on an average two fatalities daily, mostly due to pneumonia. The epidemic lasted up to the end of March.

MEDICINE AND THE LAW.

"Osteopathic Physician and Surgeon."

THE broad effect of Section 40 of the Medical Act is to forbid an unregistered practitioner to call himself a physician or surgeon. The Act, be it never forgotten, was passed with the express object that persons requiring medical aid "should be enabled to distinguish qualified from unqualified practitioners." Somehow an idea has gained currency that the words physician and surgeon may safely be used by an unregistered person if only they are embroidered in their context, and that, for instance, the adjectival description "osteopathic physician and surgeon" may be assumed with impunity. The belief seems to be attributable to the early decision in Ladd *v.* Gould, a case in which a dentist had described himself as a "surgeon and mechanical dentist." The magistrates then came to the benevolent conclusion that the word "surgeon" was merely used to indicate what branches of dentistry the defendant carried on, and not to represent him as a surgeon within the Medical Act. The result of this somewhat curious finding of fact was that the High Court ruled that the defendant had not unlawfully taken the title of surgeon. The case was decided in 1860, only two years after the Medical Act had been passed; it depended upon the special facts found and its authority is now doubtful.

In an important decision on May 11th the High Court has ruled that the name-plate of an unregistered practitioner which bore the words "Prof. A. E. Shakesby, D.O. (Lond.), Bonesetter, Osteopathic Physician and Surgeon," is an infringement of Section 40 and justifies a conviction. The Marylebone Police-court magistrate found that Mr. Shakesby was not registered under the Medical Act; he was not a legally qualified medical practitioner within the statutory meaning. He described himself as a doctor of osteopathy and an honorary member of the Incorporated Association of Osteopaths, Ltd. He held a certificate issued by the Association, but the court had no evidence of what examinations had to be passed before the certificate could be awarded. The Association issues a directory which contained the statement "Each member has a right under the articles of association to the title of osteopathic physician and surgeon." It would be strange if the Association could by such a statement repeal Section 40 of the Medical Act, but the significance of the statement is that Section 40 contains the words "wilfully and falsely," and that Mr. Shakesby, having been thus assured by the statement, might honestly believe he was entitled to describe himself as he did. These words "wilfully and falsely" (which the equivalent statutory provisions relating to registered dentists and veterinary surgeons manage to do without) are an element of the offence under Section 40. It was argued for Mr. Shakesby that he was entitled to describe himself as a bonesetter and to amplify that description by adding "osteopathic physician and surgeon"; the words "bonesetter" and "osteopathic," it was said, so qualified the description "physician and surgeon" as not to imply that Mr. Shakesby was registered under the Act. If he honestly believed he could so describe himself, he had not taken the description "wilfully and falsely," even if his belief was wrong. The magistrate held that the titles had been used "wilfully" but in view of the qualifying and amplifying words in the context, not "falsely." This meant that the offence had not been established in all its ingredients; the informations against Mr. Shakesby were therefore dismissed. On appeal the magistrate was held to have been wrong. The King's Bench Division has remitted the case to him with a direction to convict. Dealing with the argument about qualifying and amplifying words, the Lord Chief Justice observed that Mr. Shakesby's counsel seemed to be urging two contradictory things. He had argued that the words "physician and surgeon" could be ignored as mere surplusage; simultaneously he was suggesting that the words were used because they were "something grander" than the word "bonesetter." Then, by asking one penetrating question and answering it himself, Lord Hewart put the case for us in a nutshell. Why were "physician and surgeon" something grander? Because they appeared to suggest that Mr. Shakesby had qualifications which in fact he had not and which the Medical Act forbade him to assume.

The High Court decision, it will be noticed, moves in the direction of an absolute prohibition against the use of the descriptions "physician" and "surgeon" by an unregistered practitioner. Was not this the intention of the Medical Act as expressed in its preamble?

Pay-beds at the Miller General Hospital.

A year ago Mr. Justice Farwell made an order that the Miller General Hospital for South-East London might for twelve months appropriate 20 beds to paying patients. As explained at the time, the original constitution of the hospital made no provision for paying patients; the hospital is dependent almost entirely upon subscriptions, donations, and legacies which nowadays are a somewhat precarious source of income. The twelve months having elapsed, fresh application was made to the Court. Mr. Justice Farwell renewed the order, with minor modifications, till May 15th, 1937. The maximum number of pay-beds remains at 20 under the new order; these may be in any part of the hospital and may include all or any of the eight beds in private rooms; as far as possible, the private patients in cubicles in the wards are to be kept together in adjoining cubicles; the board may use any private room for a paying patient if in the opinion of the medical or surgical authorities the room is not required for a non-paying patient owing to his condition. The charge for the pay-beds is not to exceed seven guineas a week.

PANEL AND CONTRACT PRACTICE

NATIONAL HEALTH INSURANCE BILL.

The Minister's Introduction.

ON Wednesday of last week in the House of Commons Sir E. HILTON YOUNG (Minister of Health) moved the second reading of the National Health Insurance and Contributory Pensions Bill, designed, he said, to ensure the financial stability of a scheme which had for 20 years become increasingly interwoven with the social structure of the country. Under it there were 17 million insured persons who contributed year by year no less a sum than 26 million pounds. The Exchequer contribution, the sum which the nation paid in to the assistance of the scheme, was 6½ million pounds a year. In the course of the last 20 years no less than 434 million pounds had been expended in benefits. The organisation by which the scheme was administered was in the hands of 7600 approved societies and branches of societies.

FOREWARNINGS OF DISASTER.

For the first 10 to 15 years the finances saw nothing but prosperity. Large surpluses were earned, and in consequence large additional benefits could be paid—no less than 21 million pounds in the last ten years; and owing to those earlier years of prosperity, very large reserves had been accumulated by the societies—no less than 117 million pounds. For the greater part those reserves were earmarked against the positive actuarial liabilities of the societies, so that not the whole of that 117 million pounds was free for additional benefits. With the change which had unfortunately come about in the circumstances of the nation came a change in the circumstances of the scheme. A threat to the absolute stability of the finances of the scheme was foreshadowed some years ago. About two years ago his predecessor called for a special report. In that report they saw the first foreshadowing of what was beginning to be threatening in the circumstances of the scheme, because the principal circumstance that that report brought out was a very startling increase in the sickness experience of married women, which in the years 1921 to 1927 had increased, as regards sickness benefit, by no less than 106 per cent. above expectation, and, as regards disablement benefit, by no less than 159 per cent. above expectation.

In consequence of this warning, the Minister of Health issued a circular, in 1931, in which he sought the following remedies—namely, a more careful supervision of claims made and better medical certification in respect of the claims; in other words, a closer scrutiny of claims made against the insurance fund. Unfortunately, those remedies proved neither sufficiently deep nor wide enough to meet the case, and, after that forewarning, there came the severity of depression, and, with the severity of depression in the country as a whole, it became obvious that something was seriously amiss with the finances of national health insurance. Things were beginning to be unduly unfavourable on both sides of the account. Claims were increasing, and particularly in respect of the women's claims, more especially married women. On the other side of the account—the contribution income—a new menace appeared. This second menace was entirely due to the growth of unemployment. Contributors were constantly falling into arrears with their contributions, and the income from contributions was consequently falling off.

GOVERNMENT ACTUARY'S REPORT.

After those forewarnings at the beginning of this year the blow fell in the form of the actuary's report upon the scheme for the third valuation period. The situation it revealed was this: the valuation showed that they had arrived at a point at which the health insurance scheme was living upon its accumulations. During the period from the first to the second valuation, that was, during the period of prosperity, the surplus assets of the approved societies grew by no less than 25 million pounds. During the period of the second to the third valuation the surplus had increased by 12½ million pounds only, that was, half the previous increase, and, what was more unfortunate, that increase was an illusory one, because it was due, as to about half, to interest upon funds previously accumulated, upon which they must now be drawing, and as to the second part of it, to non-recurring margins. The increase of surplus assets at the last period was, therefore, illusory, and as things stood at present the rate of increase in the surplus assets of the approved societies and of the scheme as a whole was, in substance, nil. They had arrived, therefore, at a point at which, without an increase of surplus assets, the future held nothing but the necessity of living upon accumulations.

That state of affairs found its expression, of course, in the reaction upon the additional benefits. After the second valuation no less than 95 per cent. of the approved societies could, and did, give additional benefits. After the third valuation additional benefits had had to be reduced for 6¼ millions out of 17 millions, and, more unfortunately still, in respect of no less than 4¼ million contributors the additional benefits had had to be discontinued altogether. The most menacing feature of all was that no fewer than 418 societies and branches found themselves not only in a position not to give additional benefits, but actually with a deficiency; that was if they did not fall back upon central aid they would not be in a position to pay the very minimum of statutory benefits which the scheme required. The Government actuary in reporting on the state of affairs said: "Existing surpluses provide only a temporary bulwark, and serious deficiencies are in prospect."

THE THREAT OF BREAKDOWN.

If, said Sir Hilton, they went on as they were going with National Health Insurance, at the end of the next valuation period there would be widespread deficiencies among the approved societies. They would be unable to pay the statutory benefits which the scheme required. The deficiencies would be so great that the resources of the scheme would be unable to meet them, the scheme would be insolvent and would break down. This scheme had been, in a way, the pride of our social organisation, and we had boasted of its financial aspects as an example to the world. Prompt action was absolutely necessary, and it must be based upon two principles. First of all, they must secure the solvency of the scheme. In the second place, they must maintain the other foundation-stone of the scheme, which was that it was a contributory scheme—a scheme based upon the principle that people got what they paid for. It was that contributory element which they should look upon as having to be absolutely preserved and fortified in anything that was done.

The first cause of the threatened breakdown was the increase in the sickness experience, and that was particularly the case in regard to the women's claims, and more especially in respect of the married women. During the last valuation period the sickness and disablement benefit paid to women was nearly 4 million pounds in excess of the actuarial provision; that was after every allowance had been made for a reasonable increase to be normally expected it was found that the claims for women during the period was 4 million pounds in excess of the expectation. The excess was greatest at the end of the period—the last year of the valuation. The report by the Government actuary showed that during the years 1928–30, after the valuation, the average expenditure on sickness and disablement benefits of women exclusive of the State grant exceeded the provision made for it by no less than £850,000 a year. This increase over expectation had got worse and worse. The average yearly loss per head on married women was 3¼ times greater than it was with respect to unmarried women.

Only two things could be done. They must either increase the contributions or decrease the benefits. In order to make both ends meet by raising the contributions they would have to increase them for all women from 8½*d.* to 10*d.* The result of that would be that they would have to make the woman's

contribution to the scheme higher than the man's contribution. With the increase of contributions for unemployment and pensions there was the strongest possible reason against making further increases in contributions for national health insurance; and, when they looked round at the general conditions of the nation and at the industrial depression, and considered the remedies which were appropriate for our national disorder, the House would come to the conclusion that it was frankly impossible to place any fresh burden in the form of increased contributions upon either the employer or the employed. (Cheers.)

PROPOSED DECREASES.

The House was already acquainted from the White Paper with the nature of the decreases which he proposed. There were one or two points that deserved special consideration. Discrimination was made between married and unmarried women. It would be unfair to call upon unmarried women to bear the burden incurred owing to the increase of claims by married women. The unmarried women in the scheme were to married women as four to one. There was, too, a difference between the economic position of the married woman and that of the unmarried woman. Even after the reductions in benefits they would still be above the pre-war level, and would still be substantial benefits. As a result of this adjustment they would return to what he thought was a due proportion between sickness benefit and disablement benefit, the benefit which followed after the first period of sickness was over. It was always looked upon as a good rule that disablement benefit should be half sickness benefit, and they were now re-establishing that just proportion. Undoubtedly the benefits were not as great as they had been, or as they would like them to be, but what was the intention of national health insurance? After all, it was only to provide an assured minimum; it made no pretence of being able to provide maintenance. By the adjustments which he proposed, not a single penny was taken from the fund. All the money that was there before was still there; it was simply a matter of adjustment to make sure that the money went round and that the scheme did not break down.

There was another menace to the scheme on the other side of the account which was wrapped up with the question of arrears. The cause of the difficulty was the system established in 1928. That system turned out to be too big a burden for the finances of the scheme to bear. The system was that all arrears of contribution because of unemployment were totally excused. The burden that was thrown upon the funds of the societies in the then state of unemployment was £700,000 a year. Of that £500,000 was met out of the central fund by an adjustment of the unclaimed stamps account. Only £200,000 was thrown upon the finances of the approved societies. But with unemployment in its present condition of severity the burden which this method of excusing all arrears threw upon the finances of the fund was 2¼ million pounds a year. Of that, 2 million pounds had to be borne by the societies, and the funds available from the unclaimed stamps account were failing. That burden of 2 million pounds upon the funds of the societies was too heavy to be borne, and the societies could not continue it without being driven down into deficiencies, and practically into insolvency. It was urgently necessary that an intervention should be made in order to relieve them from this burden, which had proved intolerable.

The proposal was that arrears due to unemployment should be excused to the extent of one-half, the remaining one-half, less an allowance of two contributions, to be met by the insured person if he wished to cover himself for full benefits. This proposal would result in a scheme of arrears very much as before 1928. Arrears were to be excused in any case during the weeks of notified incapacity. Powers were taken to ensure that, if there was any improvement in the unemployment position, more generous treatment could be given by the excusal of more than one-half of the arrears due to unemployment. In approaching this question he had tried to do what was necessary to make things safe, but not to do anything more than was necessary in the hope of things improving, and to take power to put things back into a better state of affairs than they were before if and when the general finances of the scheme enabled him to do so. The result of the scheme with regard to arrears was that it would reduce the burden on societies by one-half, that was by 1 million pounds a year; 1 million pounds a year would still be borne by the societies, and the other million pounds would fall upon the contributors. This scheme had been submitted to the Consultative Council, and they agreed that it was the legitimate and right way of dealing with the matter.

DRAWING ON THE CENTRAL RESERVE FUND.

There was a further protection which he proposed to give to the finances of the approved societies. It was not right that, owing to this burden of arrears due to unemployment, the finances of any society should be driven into a deficiency. He therefore proposed that, if any society found itself in danger of a deficiency, owing to the burden due to arrears, it should receive a grant of the balance necessary to avoid a deficiency from the central reserve fund, and it should receive that grant in priority to any claim upon its reserves. The consequence of that would be to spread the burden of avoiding deficiencies due to arrears over the central finances of the scheme. These two proposals in respect of benefits and contributions did not wholly satisfy the actuarial demands. He had not gone so far as the most rigid standard of actuarial requirements went, but he was entitled, as hon. Members would see by reference to the report of the Government actuary, to count on an improvement in respect of claims owing to that improvement in administration which was inaugurated by Mr. Greenwood when he was Minister of Health. He (Sir Hilton) was told that it was not unreasonable to count on an improvement of 10 per cent. in respect of claims owing to the improvement in administration. If that were so, they would, by these two measures, as far as it was reasonable to foresee, assure the financial solvency of the finances of the health insurance scheme. He did not mean to say that there was not an element of uncertainty. He had felt it right in the present condition of the nation's finances to stretch a point and to take a risk, so long as it was not an unreasonable risk, while avoiding going further at the moment than was necessary for the recovery of the general prosperity of the nation.

PROLONGATION IN INSURANCE.

At the end of his speech Sir Hilton Young turned to the question of prolongation in insurance of the unemployed who, because of the failure of their contributions, would otherwise go out of insurance altogether, losing all their insurance rights, their rights to sickness benefit, medical benefit, and lastly, and worst, losing their rights to the widows' and old-age pensions at 65. Unless something was done some 80,000 men and women would pass completely out of insurance owing to unemployment. The general effect of his proposal would be that under the national health insurance scheme every unemployed man and woman would have five and a half years' free insurance without contribution, and for pensions' insurance the average unemployed man or woman would have ten years' insurance for only two and a half years' contributions. At the end of this period of prolongation they would revert to the present system of an average of 21 months' free insurance for all persons after their contributions ceased, and, on the top of that, one year of free insurance. There was one other proposed alteration

of great importance. At present, after a man arrived at the age of 60, he was continued in insurance, whether employed or not, until the age of 65 in order to qualify for the old-age pension. It had been found that an extension of that privilege could be given by reducing the age of 60 to 58½. This and other provisions of this Bill, Sir Hilton said, had the support and approval of the approved societies.

Motion for Rejection.

Mr. RHYS DAVIES moved the rejection of the Bill. He said that he agreed that they must secure the solvency of the scheme, and he thought that there was no section of the community that was not anxious to see the scheme based on insurance and actuarial principles. But if the original contracts had been carried out by the State, and the usual subsidy to these funds had been continued, the surplus of the third valuation would have been equal to that on the second. In spite of all that had been said about the scheme it was still as it stood the safest and soundest social insurance scheme in the world. Had it not been for the fact that the Ministry induced most of the approved societies to separate for valuation purposes the funds of the men from those of the women he was positive that those societies would never have had reason to complain of the heavy claims of married women. The problem would never have arisen in such an acute form. He was quite sincere in his opinion that the Ministry of Health could on the financial points of this Bill have found a way of doing all that they desired in respect of the married women without reducing their benefits.

ALLEGED LOOSE CERTIFICATION.

A large proportion of the increase in the sickness claims of married women, said Mr. Davies, came from the loose certification of the panel practitioners. The number of medical men in this country was, he believed, growing in proportion to the number of the population. He did not dispute that the doctors must have a livelihood, but the medical practitioner to-day was not adopting the same attitude towards panel practice as he used to adopt when he was employed by the old friendly societies. If the panel practitioner of 1932 did his work as conscientiously as his predecessors did for the friendly societies 20 years ago the House would not be faced with the problem of married women's claims to-day. The Ministry of Health had been so dissatisfied with some panel practitioners that they had set up what was called a regional medical service which took an oversight over the work of the panel practitioner. Approved societies that were dissatisfied with the certification of the ordinary panel practitioner sent thousands of cases annually for second medical opinion. Were it not for the work of the regional medical officer, the percentage of this increase might easily reach double what it was now. The Ministry of Health had done a great deal in regard to this problem. They knew as well as the administrators of the approved societies that the situation regarding certification was very unsatisfactory. In his view the medical practitioners who were dealing with national health insurance ought to be employed by the State. He saw no other way to secure proper certification.

Mr. MCGOVERN: Is the hon. Member suggesting that the medical profession are passing people for benefit who are not suffering from illness?

Mr. DAVIES: The real fact is that the average panel doctor is doing his work well, but there are certain practitioners who are known to be granting medical certificates improperly.

Mr. MAXTON: What is the motive?

Mr. HOWARD said that if they did away with the opportunity which was allowed to patients to transfer from one practitioner to another they would prevent the granting of these easy certificates.

Mr. DAVIES said that that was exactly his point. This problem of the medical profession was not a new one. Those who administered the scheme knew too of the extravagant claims of some dentists, opticians, and surgical instrument makers. He believed that by adopting a better system of administration, by securing better medical certification, and by the elimination of what he termed uninsurable types of cases from the scheme, it would still be possible to save the married women and the single women from any reduction of benefits.

A SPECIAL CLASS FOR MARRIED WOMEN.

Mr. LLEWELLYN-JONES said that some of those who were associated with the administration of national health insurance felt that this Bill did not go far enough, and that the whole position would not be safeguarded by this measure. Therefore on the committee stage it was proposed to put down an amendment which contemplated that all married women should automatically be transferred to a special class as from the date of marriage and become entitled to the benefits of that class, whether or not they continued in employment; and that those who ceased employment would ultimately pass out of insurance in the same manner as at present; whereas those who continued in employment would requalify for full insurance by shorter waiting periods than at present. He was satisfied, however, that legislation alone was not going to clear up the grievances of which they had to complain. Very strong stern administrative action would be required.

He disagreed with the attack which had been made on the panel practitioners by Mr. Rhys Davies. For over 20 years he had sat as chairman of the Insurance Committee for his county of Flint, and he could not remember a single case of a complaint by an approved society against a medical man in his county as regarded irregular certification. On the whole he believed that the great mass of medical practitioners on the panel endeavoured to administer the Act in the most straightforward manner in the interests of their patients.

Mr. DAVIES said that that was exactly what he had said, but he pointed out that if 2 per cent. did not do the right thing it was damaging to the funds of the societies.

Mr. LLEWELLYN-JONES said that he could not agree with the line which his hon. friend had taken. He had made a very bitter attack upon the medical profession. He was quite sure that if complaints about improper certification by doctors were reported to the British Medical Association immediate action would be taken. But he (Mr. Llewellyn-Jones) did not wish it to be understood that he thought that the medical profession could not have done more than they had done in the matter of certification. It was a very easy thing for a medical man to err on the wrong side. The difficulty of the medical man was very much greater in the case of women, particularly of married women, than in the case of the ordinary worker.

REMEDIES.

During the past few months, Mr. Llewellyn-Jones continued, an attempt had been made by insurance committees with the concurrence of the Ministry of Health to arrange for conferences of medical men, representatives of insurance committees and of friendly societies, and he was satisfied that those conferences had resulted in a vast amount of good. In regard to the question of certification and excessive claims on societies, he was not satisfied that societies had done all that they could. He thought that the system of sick visiting was of very little value. It was only by constant vigilance that they could get off the books of the approved societies persons who were malingering.

Mr. MELLER said he had spoken in the past with regard to medical men and health insurance, but he was not prepared to say that bad medical service was so widespread as to make the difference between the expected sickness experience and the actual.

In the main he believed that the doctors rendered excellent service. It was a matter for coöperation between all parties concerned in this question of health insurance. A deputation representing all types of approved societies had waited on the Minister and had expressed their firm conviction that the present position of affairs must be met in the way the Minister of Health had met it. He hoped that the Minister, having taken the advice which was tendered to him in the interests of the societies and of the insured persons, would also take the advice which would be tendered to him in the form of a new clause which would be submitted in Committee to extend the differentiation between married women and single women. Otherwise he agreed with the main principles of the Bill.

THE PRINCIPLE OF EQUALITY.

Miss RATHBONE asked the Minister whether the method adopted in the Bill was the only possible means of meeting the deficiency. Might it not be possible to meet it by some form of pooling the surpluses of those societies, a very substantial number, which still had such large disposable surpluses that they were able to give substantial additional benefits. Was it not right that in a State system of insurance, contributed to by the State, the principle of equality should be carried at least far enough to assure that the rates of benefit necessary for subsistence should be paid to everybody before any group of fortunate contributors were allowed to enjoy additional benefits? She did not think that it was beyond the power of the Minister of Health to devise such a method if he wished to do so. She would have no hesitation in opposing the Bill as long as it remained in its present form.

SOLVENCY OR HEALTH?

Mr. MAXTON, in supporting the motion for the rejection of the Bill, asked if the Minister of Health ought to allow the question of the solvency of the fund to take first importance in his mind. The main purpose of the national health insurance scheme was the maintenance of the general health of the community. One of the most obstinate problems was that of the maternal death-rate in childbirth, and he urged the Minister to bear that matter in mind when he picked out the married women as the special instrument for achieving a solvent balance-sheet. He asked the right hon. gentleman if it was sound national economy to risk a serious deterioration in the health of the nation. The Government were asking the sick women to shoulder an added burden to save the nation from collapse.

A SCOTTISH SCHEME.

Mr. SKELTON (Under Secretary of State for Scotland) said that the Bill would, to a considerable extent, solve the problem of arrears which had pressed so heavily on the Scottish friendly societies. The Scottish Department had attempted to solve the problem of the increase in the claims of married women. Their report would show what had happened since June, 1930, in relation to sickness and insured persons in Scotland, and the report would tabulate the number of certificates given by medical men. That would furnish a double check on how far in certain districts certain complaints and ailments were prevalent, and the kind of proportions in which medical men gave certificates. That would furnish a very real addition to their knowledge of the question of insurance medical benefit. The first report, for the year from July 1st, 1930, to June 30th, 1931, would be published shortly.

THE MEDICAL VIEW.

Lieut.-Colonel FREMANTLE said that he was much interested in the scheme which had just been propounded by the Under Secretary for Scotland—a kind of sleuth-hound, Sherlock Holmes scheme for the investigation of the crimes or otherwise of the medical profession in this matter. Of all those who were concerned with the question of the health of the people generally, none would wish more strongly than the medical men themselves that this inquiry should be successful in running down any real negligence on the part of the panel practitioner. No one could be a friend of the medical profession, or of the panel practitioner in particular, who in any way supported any suggestion of laxity on their part. It was true that a panel doctor often knew, while the regional medical officer who came in from outside did not know, the real human side of a case, and that had to be considered in regard to the difficulty about certification. If these matters were to be judged by bureaucratic methods, and if one doctor who certified 50 per cent. more patients than another was to be adjudged wrong, it would reduce the whole thing to ridicule.

They could not, he went on, judge human action by percentages. Material facts could perhaps be so judged, but they were dealing in this instance, not with material facts, but with human judgment, and that was the difficulty of getting at the real truth on the subject of certification. He agreed that the difference in certification for sickness benefit could not all be attributed to malingering, but that, nevertheless, some must be attributed to it. He did not like the use of the word "malingering" or the phrase "false certification," because such words led them astray. The great majority of people did not deliberately break the law or cheat, but they were human, and the result was that, on the one hand, they naturally took benefits as they came to them in the ordinary kind of way, while, on the other hand, the doctor signed certificates as a matter of course, not meaning to deceive anyone or to betray anything, but in the hurry of his ordinary practice. The medical profession were probably the most unbusinesslike people in the world in their general practice, because their work had such a compelling human appeal that they could not be businesslike in their ordinary arrangements. Even when doctors had time to be businesslike, they suffered from never having learned the habit of being businesslike. It was natural for them to do what they could for their patients, and to do what their patients wished them to do; and it was natural that if the patient came to his doctor and said, "Sign me again, doctor," he signed. He (Colonel Fremantle) agreed that the doctor was not fulfilling his contract under the insurance system, and that an insurance system would break down if that practice were followed generally. He was only saying that it was a natural tendency, and the reason why it involved going against the rules was that the whole national health insurance system was against the rules. When they had anything systematised they were bound to have difficulties.

SOUNDNESS OF THE SCHEME: SIGNS OF IMPROVEMENT.

They had to keep the insurance system watertight and financially sound if it was not to break down, and to see that the systems of public health and public assistance should be improved wherever possible. The question, said Dr. Fremantle, was in what way they could make it sound. The figures showed an increase in certification up to 1927, but he was rather surprised that the Minister had not also remarked that the figures since then showed a definite improvement. He rather left the impression that there had been this constant increase in certification for sickness and disablement benefit among women.

As a matter of fact, in the last three years there had been a considerable improvement. Disablement and sickness were practically stationary at a level slightly above that reached in 1927 for unmarried women, while those for married women had substantially increased. The Minister was banking on having a 10 per cent. improvement during the next few years. The figures for the last three years of the Hearts of Oak Society, with which he was proud to be

associated in the work of honorary arbitrator, certainly did not show that there was likely to be a 10 per cent. improvement. There had been an improvement on some lines, but on others it was very slight. The figures for women's sickness in 1930 were £70 benefit per 100 members, and in 1931 £60. Disablement benefit was reduced for all women from £52 to £49, with different figures for spinsters as opposed to married women. Married women were very much more. There was not very much reduction, and that reduction really corresponded to the reduction in the scale of benefits.

He was afraid that the 10 per cent. reduction on which these estimates were framed would not be sufficient, and that was why he hoped they might be able to get support for the amendment which had been adumbrated by Mr. Llewellyn-Jones. It was a natural, reasonable, and right suggestion, in accordance with the hon. Member's diagnosis of the trouble. Women, when they were married, tried, wherever they could, to retain benefit so long as they remained in the same class. The suggestion in the amendment was that they should go into a separate class—Class K—until they were definitely disabled, and then they would go back to Class E and get their benefit. That was a human, natural way of meeting the point, and they would get by it a further reduction in sickness and disablement without any real hardship.

PROLONGATION OF BENEFIT.

Dr. Fremantle said he had been asked also to support an amendment put forward by the National Association of Insurance Committees to prolong medical benefit along with the prolongation of pension rights. Obviously they would all wish to see that if possible, but it depended on finance. He understood from his society that it would not be practicable to make that further concession of medical benefit for another two years, but he hoped that the matter would be properly looked into, and that they would consider it in committee. If in any sense the Bill reduced benefits it must be an unpopular thing to do, but if it was right they ought not to hesitate. They would gain credit and confidence for the National Government if they helped to make the scheme sound. So much depended on this because the health of the people depended on it. The whole system was badly conceived and largely politically conceived, and there was a great deal wrong in it. It was more directed to benefit than to treatment and prevention of sickness. It had failed a great deal from that point of view, but they had to make the most of it, and they had made a great deal of it. There was a great deal of good in it which could be preserved and enlarged. It was not true that the health of the people was deteriorating. It was extraordinary how the health of the people had been improving in spite of all the difficulties of the past few years, and they had to see that that improvement and the benefits continued. They could only do so if sound financial lines were adhered to.

A QUESTION OF COMPLAISANCE.

Sir H. CAUTLEY asked if there was any information in the possession of the Ministry of Health showing the effect of paying benefit for the first three days. One heard rumours and stories of how members of approved societies in town wished to take a holiday, a long week-end of four or five days, and that a complaisant doctor did not take very much trouble, and the members went on benefit for those week-ends. He wondered whether that benefit, which he had always mistrusted, had not been abused and if there had not been laxity in this administration.

Dr. O'DONOVAN said that this was a matter of interest to the medical profession. He asked Sir H. Cautley to translate the stories of what he heard into how he heard them and from whom. The medical profession, he said, would then be greatly obliged to the hon. Member.

Sir H. CAUTLEY said that he only heard it. Numbers of people told him so, but otherwise he was not prepared to justify it. He was asking for information, and whether there were any statistics on the subject. He also asked if it would not be advisable to alter the system of the relationship of the panel doctor and his insured patients. At present no notice had to be given of any change of doctor. Could a doctor be more secured in his position by two, three, or four months' notice being required from a patient before he could change his doctor? At present the doctor was put in the position that if he refused to sign a certificate that a panel patient was ill, the patient might, in the heat of the moment, apply for a change in his medical attendant. While he did not suggest that the doctor did not try to do his best in a very difficult situation, he said that it was not fair to him, and that he ought not to be placed in that position.

A DEGRADING POSITION.

Mr. MACQUISTEN said that there was no more unpopular Act amongst the masses of the people than the National Health Insurance Act. The vast mass of doctors had been reduced from a profession to becoming tax collectors, a brotherhood of Zaccheus. They did nothing but collect and fill up forms and were insulted by committees of laymen, and surcharged if they gave patients medicines which were a little expensive. The medical profession had been largely degraded by the position into which its members had been put by this abominable Act. A different breed of men had come into the profession, and doctors themselves, or most of them, would tell them how they detested it.

A doctor friend of his in Edinburgh told him that he was getting £1500 a year for a few working men waiting in his consulting room in the evenings. He said that he got £75 a quarter from people who were too indignant to nominate a doctor and whom he therefore did not attend, and he felt as if he were getting money under false pretences. He (Mr. Macquisten) asked why he did not "chuck it," and his reply was that if he did so some other fellow would get it; that it helped to pay for his car and household expenses, and enabled him to build up a West End practice on the backs of the poor. It was all nonsense to talk about the Act protecting the people's health. Dr. O'Donovan had asked Sir H. Cautley to give instances in regard to his references to the medical profession. He (Mr. Macquisten) would give instances. To begin with, a substantial percentage of doctors practically wiped their boots on the panel patients when it was impossible for the patient to change his doctor. When the patients got some liberty and the chance of changing their doctor, there was the inevitable result of competition for patients. He did not blame the doctors. They were only human beings, and if he were put in the position of having to compete with other doctors to get 10s. a year each from several thousand people he would naturally look after himself, though he might curse the Government which had put him in that position.

LAX CERTIFICATION.

Mr. A. GREENWOOD said that it was difficult to ascribe reasons for the increase in the claims among married women, but he was satisfied that the long drawn out trade depression was one of the most important. While he did not suggest that the doctors were acting dishonestly or that married women were trying improperly to obtain benefits under the National Health Insurance scheme, it was undoubtedly true that there were cases of lax certification by doctors and a desire on the part of insured persons to get something to which they were not entitled. It was not fair to reduce the disablement benefit of the single women. If the nation were really hard pressed he would not complain of a reduction of benefits all round, but the trouble was that they were not all poor together, and it was a little mean to filch half-a-crown from the pockets of married women, honest industrial workers, in a time of sickness.

The Parliamentary Secretary Intervenes.

Mr. ERNEST BROWN (Parliamentary Secretary to the Ministry of Health) said that solvency was not an abstraction but an essential condition of paying not only the proposed benefits, but any benefits at

all. In making the proposed changes the Government had had to do it so as best to guard the pension rights of these poor people as far as possible, consistently with a sound scheme. Colonel Fremantle and other Members had raised the question of a special class for married women. That was a case which could be presented during the Committee stage of the Bill, when everything for and against the proposal would be heard with great care by the Minister of Health. Everyone knew that the most subtle and difficult of all approved societies' problems was the decision as to when a married woman was or was not sick. It was not only a difficulty for the doctor, but for the approved society. Even in the smaller towns, where everyone's movements were known, it was very difficult to decide whether there was laxity or not in regard to certification of married women. It was certain that the actuarial risk in the case of married women under an insurance scheme was out of all proportion to the risk in the case of men or of single women. Because that risk had assumed such great proportions, the Minister of Health had felt it right to face the problem in the way which he had done, and to say, regretfully, that the only thing to be done was to tackle the question of what was the risk, in terms of the solvency of the scheme, in the case of married women.

AN ANTIDOTE.

Dr. O'DONOVAN said he had heard a most corrosive contribution to the debate, and if taken seriously it might lead administrators into difficulties and politicians into trouble, and lead to the use of the medical profession as the goat of Israel, so that they might tie their sires upon its horns and push it into the wilderness. They had heard from Mr. Macquisten that doctors accepted their money as if that money were obtained under false pretences. It was no help to clear thought or any aid to debate that a profession should have attached to it so criminal a label and so vile a libel. They were told on the authority of Mr. Macquisten that a new breed of men had come into the medical profession. He would assure the House that those who were entering the medical profession proceeded to the ancient universities where they studied athletics and the humane arts, and they then entered the hospitals to be taught the same traditions of medicine as existed before the National Insurance Act was ever thought of.

He was troubled, said Dr. O'Donovan, to think that it should be thought in the House of Commons that a member of the medical profession ought to be perfectly content to maintain his family on a salary of £300 a year; that he should live until death called him in a miasma of disease and in the midst of the direst poverty on such a sum; and that, on the other hand, if he took service under the panel, and received £1500 a year, he ought to be troubled in his conscience and refuse to work. It had been a blessing to the profession that thanks to the National Health Insurance Act doctors could now bring up their sons to that profession which they loved, and hand on from father to son the great tradition of service. He submitted that the Insurance Act had brought into the profession a wider selection of keen minds anxious to maintain the public health. The Act had worked well because it had received the coöperation of an intelligent and learned profession. Acting through the British Medical Association the medical profession had worked cordially with Governments of all colours for the people's health, and because of that coöperation the points of this Act had been good. The British Medical Association would celebrate the centenary of its foundation this year in London under the presidency of Lord Dawson, and hours would be devoted by the keenest minds to the discussion of public health problems.

Members of the medical profession, Dr. O'Donovan continued, had been drawn into public life because through the Insurance Act they had been interested in public health administration. They had not segregated themselves entirely in the atmosphere of the sick-room. Owing to this Act, which had been so much derided, our medical research through the medium of the Medical Research Council had been placed on a footing which was the admiration of Europe. Through that they had been able, with the coöperation of the large voluntary hospitals, to bring every modern device of science and the help of specialists to the home of every one of His Majesty's subjects. He apologised for delaying the House, but a corrosive acid should have some antidote. (Cheers.)

MOTION FOR REJECTION LOST.

The motion for the rejection of the Bill was rejected by 245 votes to 43, and the measure was then read a second time.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED MAY 7TH, 1932.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 68 (last week 62); scarlet fever, 1494; diphtheria, 708; enteric fever, 35; acute pneumonia (primary or influenzal), 1033; puerperal fever, 58; cerebro-spinal fever, 63; acute poliomyelitis, 5; acute polio-encephalitis, 3; encephalitis lethargica, 11; dysentery, 24; ophthalmia neonatorum, 108. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on May 10th–11th was as follows: Small-pox, 109 under treatment, 6 under observation (last week 106 and 2 respectively); scarlet fever, 1508; diphtheria, 1334; enteric fever, 8; measles, 2615; whooping-cough, 428; puerperal fever, 15 (plus 3 babies); encephalitis lethargica, 226; poliomyelitis, 4; "other diseases," 90. At St. Margaret's Hospital there were 14 babies (plus 8 mothers) with ophthalmia neonatorum.

Deaths.—In 117 great towns, including London, there was no death from small-pox or enteric fever, 87 (41) from measles, 5 (3) from scarlet fever, 49 (11) from whooping-cough, 26 (7) from diphtheria, 48 (17) from diarrhœa and enteritis under two years, and 36 (5) from influenza. The figures in parentheses are those for London itself.

Liverpool reported 10 deaths from measles, Derby 5, Walthamstow and Manchester each 3. Birmingham reported 5 deaths from whooping-cough, Manchester 4, and Liverpool 3. Three fatal cases of diphtheria were reported at Tottenham and at Hull.

The number of stillbirths notified during the week was 316 (corresponding to a rate of 45 per 1000 births), including 56 in London.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

Surg.-Comdr. S. W. Grimwade is placed on the retd. list at his own request with rank of Surg. Capt.

Surg. Lt.-Comdr. T. C. H. Neil to *Ceres*.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. G. B. F. Churchill, having attained the age for compulsory retirement, is placed on retd. pay.

J. W. A. MacIver to be Lt. (on prob.).

ARMY DENTAL CORPS.

Lt. W. G. Martin to be Capt.

TERRITORIAL ARMY.

Capt. G. Bailey resigns his commn. and retains his rank with permission to wear the prescribed uniform.

Capts. P. Mumford and K. V. Bailey resign their commns.

Lt. W. A. Ball to be Capt.

Lt. R. Jackson resigns his commn.

INDIAN MEDICAL SERVICE.

The undermentioned Capts. (prov.) (on prob.) are confirmed in their rank: Capts. (on prob.) R. R. Bakhshi, D. C. Chopra, and M. Jafar.

CORRESPONDENCE

APPENDICITIS.

To the Editor of THE LANCET.

SIR,—I have read with great appreciation the lecture of my old friend, Sir James Berry, on "Fallen Idols." Making all allowance for inaccuracy of old impressions and for defaults of memory there can, I think, be little doubt that appendicitis is far more frequently seen in hospital wards than "perityphlitis" ever was. I can recall a few cases, seen in student days, of abscess in the right iliac fossa which pointed, or of abscess in the pelvis which emptied through the rectum. I clearly remember cases of general peritonitis which on the post-mortem table showed sphacelation and rupture of the appendix; and I recall that "Wilks and Moxon" described similar conditions. I hold firmly to the opinion, which I have endeavoured to express to generations of medical students, that "no one should ever die of appendicitis," and I have also affirmed with equal truth and emphasis that deaths in this disease are too often "therapeutic"—caused, that is, by active measures designed for relief.

In olden days all cases which would now be classed as "appendicitis" were treated, in medical wards of course, by starvation and by administration of calomel and opium, one-quarter grain of each every four hours. When abdominal surgery first entered upon its startling career, that great pioneer, Lawson Tait, advocated with characteristic vigour the aperient treatment of the peritonitis that not seldom followed operation. Surgeons everywhere were encouraged to give, and often to repeat, large doses of purgatives of the most active and turbulent character. When, therefore, abdominal distension and intestinal paresis were observed in cases of "perityphlitis," which Reginald Fitz was teaching us to call "appendicitis," surgeons turned with enthusiasm, and with disastrous consequences, to purgatives to bring relief. From that custom, almost alone, the whole prospect before patients has undergone a bitter change. Harvey Cushing showed long ago that the cæcum, terminal ileum, and lowest part of ascending colon, have the highest bacterial content; and that micro-organisms therein are possessed of greatest virulence. One effect of aperients is to increase secretion; another, to arouse greatly strengthened muscular contraction. If the lumen of the appendix is blocked, and if the obstructive agent cannot be expelled by the agitation caused by purgatives, perforation will occur and the material extravasated into the peritoneum will then be of most infective power. I can hardly expect it to be credited, but it is nevertheless true, that for over twenty years I have not operated upon one single case of perforation (I exclude gangrene without perforation) in which an aperient had not been given. The philocathartic propensities of mothers and grandmothers (especially grandmothers!) lead them to administer castor oil or some equally active purgative to children who complain of "stomach ache." The most precious rule of all is, however, *avoid aperients*. Were this rule observed we should rarely see "therapeutic peritonitis" in children.

My view of treatment in cases of appendicitis may therefore be briefly and categorically stated:—

(1) Early operation in all cases is the best; by "early" is meant within four or six hours of the onset of the invariable inaugural symptom pain.

(2) If an aperient has been given operation at the earliest possible moment is imperative. Whatever risks are then taken will almost certainly be less than the risks of delay. The patient's condition may dictate a simple swift procedure, and a local anæsthetic. "Get in quick, get out quicker," as J. B. Murphy taught.

(3) If no aperient has been given, starvation, opium, absolute rest may enable a deliberate leisurely choice to be taken, in favour either of operation or of delay until resolution or suppuration occur. Such suppuration will always be local, and vent may be given by abdominal incision over the centre of the abscess, or by incision made in a few seconds into an abscess presenting in the vagina or protruding into the rectum. Such low openings lead to quicker healing than any others; and when, two weeks later, the appendix is removed, the surgeon will be surprised to find how little evidence remains of suppuration.

Ruthless operation with large incisions and a mind set upon removal of the appendix when an abscess is opened are, I cordially agree with Sir James Berry, entirely out of place. May I thank him for a most timely and sagacious contribution to a subject in regard to which wisdom has not yet descended upon us all? I am, Sir, yours faithfully,

Leeds, May 14th, 1932. MOYNIHAN.

To the Editor of THE LANCET.

SIR,—I have examined the statistics of the cases of appendicitis which have been under the care of the staff in St. Thomas's Hospital since the year 1869. The result is very striking, more especially when we consider that in many instances several of those who came for hospital treatment had been under care by general practitioners for one or perhaps five previous attacks. As the numbers of this disease treated at St. Thomas's are equalled or possibly surpassed by those admitted to other London hospitals, whilst private nursing homes are seldom without cases of operation for this disease, it has been considered advisable to approach THE LANCET to suggest an inquiry into the causation of appendicitis and its spread in recent years.

It is an investigation which cannot be carried out by private individuals, and we have thought that THE LANCET, with its record of help to the profession (during past years), would most efficiently carry out such investigation to a successful result. I am permitted to add the names of Sir Percy Sargent, senior surgeon to St. Thomas's, and Dr. A. E. Russell, consulting physician, St. Thomas's, in this suggestion.

I am, Sir, yours faithfully,

W. H. BATTLE,
Consulting Surgeon, St. Thomas's.

Harley-street, W., May 11th, 1932.

To the Editor of THE LANCET.

SIR,—In his address to the Medical Society of London Sir James Berry has revived an old controversy which most surgeons had considered settled. During the period that Sir James was surgical registrar at St. Bartholomew's I was house surgeon to Mr. Howard Marsh and his junior, Mr. Bowlby (as he then was), and can claim to have been brought up in the conservative school, better styled perhaps, the school of "delayed action." In those days it frequently happened that appendix cases were not

admitted until a swelling had called attention to the necessity for surgical treatment. The acute fulminating cases were too often labelled as peritonitis, and failed to reach hospital in the operable stage, or if they did, often failed to survive. The statistics which Sir James gives of a series of cases admitted to the medical wards give no true picture of the mortality of appendicitis at that time.

The expectant policy which Sir James advocates in cases which have become localised and are developing an abscess is a policy of safety which was very commonly adopted in those days, and is perhaps not followed as often as it should be at the present time. I am in agreement with him with regard to the dangers of feeding, purgatives, &c., when an expectant policy is being adopted, and also as to the risks of approaching an inflammatory mass via the peritoneal cavity. I cannot, however, help feeling that Sir James in his address has lost sight of the very important fact that there are two distinct types of the acute appendix.

(1) There is the acute inflammatory (non-obstructive) type which is ushered in with malaise, rise of temperature, tenderness, and pain which is ultimately localised to the appendix region. Many of these cases subside under appropriate expectant treatment although, if diagnosed and operated on early, they run on the whole less risk than by expectant treatment. The best policy to adopt in this type of case is a matter of opinion, and each case must be judged on its merits.

(2) The other type is the acute obstructive (or mechanical) appendix, which has an entirely different onset, with sudden severe pain and vomiting which continues unless spontaneous relief occurs. In these cases there is seldom any warning, and no initial malaise or inflammatory signs. It is these cases, where a stercolith occludes the lumen, which fulminate rapidly, unless spontaneous relief occurs, and end in gangrene and perforation. When perforation occurs there is often sudden relief of both pain and distress and a short quiescent period results which may be most misleading, until the signs of peritonitis develop. The absence of inflammatory signs and the sudden cessation of acute symptoms sometimes give rise to a faulty diagnosis of intestinal colic. To delay operation in this type an hour longer than is absolutely necessary is to run a very grave risk. To deliberately adopt a waiting policy when an obstruction has been diagnosed is to invite perforation and disaster, and a policy such as this must be responsible for many deaths.

Prof. D. P. D. Wilkie, not long since, called attention in the medical press to the importance of recognising these two types, and for many years I have taught students the importance of distinguishing between these two classes and the urgent necessity for prompt treatment in the obstructive cases. It is true that after the first 24 hours or so the two types often cannot be distinguished, because inflammatory signs are added to the obstructive, but it is in the first 24 hours that the great risk of perforation and general peritonitis occurs, which can and should be avoided if diagnosis is sound and the urgency realised.

I venture to think that Sir James Berry, by omitting to refer to this type of case, may mislead many, and in so doing be responsible for more lives being lost than might be saved by following his precepts in other types of appendix inflammation.

I am, Sir, yours faithfully,

London, W., May 16th, 1932. C. GORDON-WATSON.

QUININE IN THE MÉNIÈRE SYNDROME.

To the Editor of THE LANCET.

SIR,—In a paper on the treatment of the Ménière syndrome (THE LANCET, Feb. 6th, p. 285) Mr. Keen makes the statement that "quinine should be avoided." I am convinced that if this advice is strictly followed out a great deal of relief will be withheld from many sufferers. The administration of such small doses as gr. ½–1, two or three times a day, has often produced the most gratifying effect. At the West End Hospital for Nervous Diseases my colleagues referred to me cases presenting the Ménière symptoms, and in a consecutive series of 48, the effect of small doses of quinine was tested. In 12 no report was obtainable, and of the remaining 36, there was in 28 well-marked and in 2 doubtful, improvement, while in 6 there was none. In these 6, the diagnoses were climacteric congestion of the labyrinth, hysteria, labyrinthine congestion, doubtful labyrinthine effusion, intense neurasthenia, indefinable vertigo. They were, therefore, not clear-cut cases.

The other cases presented the ordinary features of a damaging lesion of the labyrinth of one side, and the vertigo depended mainly on the asymmetrical action of the two labyrinths. The beneficial effect was probably due to the sedative action of the quinine on the sound one. In such cases the administration of quinine in small doses sufficient to quiet the equilibrial labyrinth without materially affecting the hearing is very efficacious, even if it only breaks the vicious circle and removes the apprehension of further attacks until "compensatory" equilibrium is restored. That the beneficial result was really due to the quinine was proved by the fact that the substitution of quassia for quinine in a number of cases was followed by recurrence of the vertigo which subsided when quinine was again administered.

My favourable opinion of the value of this treatment is endorsed by Prof. Albert Ramsbottom (THE LANCET, 1924, ii., 1191), who writes as follows: "On the whole, however, I believe that quinine in small doses with or without bromide will be found to be the most valuable drug in warding off attacks of vertigo of this class," viz., a non-suppurative lesion in the labyrinth. He prescribed it as follows: Quin. sulph. gr. ½, acid. hydrobrom. dil., ℥ xv., tinct. aurantii, ℥ xx., aq. ad ½ oz. I am sure it will be found useful in genuine cases.

I am, Sir, yours faithfully,

London, May 10th, 1932. JAMES DUNDAS-GRANT.

"EXCESSIVE SURGERY."

To the Editor of THE LANCET.

SIR,—In your issue of May 14th (p. 1047) Mr. F. M. Loughnane is reported to have said in a discussion on excessive surgery that "Hurst admitted that 20 per cent. of chronic gastric ulcer cases died of carcinoma." I have never made any such gross travesty of the truth. I have no figures of my own but I have often quoted Prof. M. J. Stewart's very accurate investigations which showed that among 180 chronic gastric ulcers removed at operation and specially studied from this point of view 11, or 6·1 per cent., showed evidence of becoming malignant. As only the more severe cases of ulcer, in which medical treatment has failed, are likely to come to operation, the percentage undergoing malignant degeneration is probably much less than this.

Mr. Loughnane added that "laparotomy did no

harm and made it possible to prevent the onset of carcinoma." The second statement is no doubt true if partial gastrectomy is performed, but with an *average* mortality of at least 10 per cent. and with the definite (though now preventable) risk of severe achlorhydric anæmia developing as a sequel to the operation the first statement cannot be accepted. My own experience is that with very few exceptions gastric ulcers heal completely with adequate medical treatment, and Stewart has shown that the risk of carcinoma developing in the cicatrix is negligible.

In the rare cases of failure with medical treatment I have no hesitation in advising a gastrectomy sufficiently extensive to produce complete achlorhydria, but all palliative operations such as gastro-jejunostomy and jejunostomy have no advantage whatever over medical treatment and do not remove the small risk of malignant degeneration in the future.

I am, Sir, yours faithfully,

May 16th, 1932. ARTHUR F. HURST.

TRAINING IN TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—I notice that so far there has been no reply to the chief points of Dr. Davidson's admirable letter in your issue of April 30th (p. 954). I am writing because my work for the last 12 years as physician in charge of the tuberculosis department at St. Thomas's Hospital, which includes the teaching of students, has led me to form very decided views on the problems of how students should be taught and what they should know.

1. How should students be taught? Dr. Davidson favours a compulsory course, just as specialists in the numerous special departments ask for a compulsory course in their particular subject. The department at St. Thomas's is self-contained. It includes an out-patient department, a borough dispensary, a tuberculosis ward, and a lady almoner's and after-care section; and in addition there are facilities for all the special investigations afforded by a general hospital. In my opinion, a student can obtain at least a satisfactory knowledge of the subject if he spends one morning a week in the out-patient room and one in the ward, over a period of three months. I regard it as essential that the numbers of students should be limited to four in the out-patient room and to 16 at the visit to the ward. The limitation in the out-patient room is important, not only from the point of view of the patients, but especially from that of the students. Each student needs individual attention, and the teaching on any particular case must be adapted to the capacity of the student concerned. What may be a useful and illuminating suggestion to a clever student often produces a dangerous perversion of the truth in the mind of one less gifted. So I try to keep the out-patient classes small, and as far as possible I grade them according to capacity. It follows that I cannot teach more than 64 students a year as I think they should be taught, yet the department is not a small one, for the new cases average 2000 a year and there is work for two whole-time medical officers. If the course were made compulsory the scope of the department would have to be increased, and I might not get the interest and attention which are usually shown by the volunteer.

2. What should students know? In the ward they should learn the general clinical aspect and the modern methods of diagnosis and treatment, from a systematic course of clinical lectures. But they need something more practical as well. The majority of students become general practitioners, and they will then require to know: (1) what cases to suspect; (2) how to make use of the local tuberculosis scheme; (3) how to treat complications; (4) how to recognise recrudescence of activity; (5) how the limitations imposed by treatment and by the disease itself will affect the patient in his work and environment; (6) what can be done to prevent spread of the disease. I maintain that subjects such as these should be taught in a dispensary.

At St. Thomas's eight whole-time clinical assistants each year receive special training, but organised post-graduate teaching is not undertaken, and therefore I am not qualified to discuss it. It is, however, a question which must be taken into account when training in tuberculosis is under review.

In conclusion, I would plead that for adequate instruction in tuberculosis a carefully organised department, including a tuberculosis dispensary, and a systematic and practical course of teaching are both essential elements, especially if that instruction is compulsory.—I am, Sir, yours faithfully,

G. T. HEBERT, M.D., F.R.C.P.

Harley-street, W., May 12th, 1932.

To the Editor of THE LANCET.

SIR,—I note with satisfaction the comments of the secretary of the University of Aberdeen on my letter in your issue of April 30th. My statements were based on a communication sent to me by the Joint Tuberculosis Council containing a digest of information supplied to that council by the deans or secretaries of various medical schools. From this it was by no means clear either that the training in tuberculosis at Aberdeen was compulsory for the M.B. degree, or that any definite coöperation existed between the municipal authorities and the university. In view of the admiration I have always felt for the clinical teaching at the Aberdeen School, I sincerely hope that my observations may not be misconstrued as intending any adverse criticism, and I am grateful to Mr. Butchart for pointing out this unintentional error on my part.

I am, Sir, yours faithfully,

MAURICE DAVIDSON.

Wimpole-street, W., May 13th, 1932.

CŒLIAC DISEASE AND DWARFISM.

To the Editor of THE LANCET.

SIR,—Dr. Vaughan and Dr. Hunter in their reply to my letter again ignore the carefully worded statement of our original article to the effect that the case had been considered to be renal only before our examination. I can only emphasise for the third time that we never at any time considered the cause to be renal.

This, however, is beside the point.

I may perhaps mention that at the time this investigation was carried out Dr. Hampson and myself were specially interested in sprue and cœliac disease, and were on the lookout for the evidence of either in all the cases of megalocytosis investigated by us. We were equally alive to the fact that the symptoms of cœliac disease might not be a prominent feature of the case. I can only repeat that the finding mentioned in our article of a "slight excess of soap crystals" in one single specimen of a series examined especially for their presence cannot be accepted as a finding in any way suggestive of cœliac

disease—the more so as neither at that time nor at any previous time were the stools "pale and porridgy," as Drs. Vaughan and Hunter agree that they should have been. The patient and her parents were closely questioned on this point.

The reference to erythroblastic anæmia tends further to confuse the issue; the white cell count in the patient under discussion was *not* high, the total white count being 4800 per c.mm., with a differential count as follows: polymorphs, 50 per cent.; lymphocytes, 42 per cent.; hyaline cells, 6 per cent.; eosinophils, 2 per cent.; there were no abnormal white cells present.

Drs. Vaughan and Hunter must have notes on cases, as we have, in which megalocytosis has occurred in young children both with and without an increase in the white count, and in which repeated examinations of the stools have revealed no abnormalities; such cases occurring since the introduction of liver therapy have been cured by that treatment. Whether the white cells of young children respond in a similar manner to those of adults may be open to debate, but there is considerable evidence to the contrary—e.g., acholuric jaundice when it occurs in infancy and childhood may be associated with a white count which shows a large number of myelocytes with occasional myeloblasts, though this is not the case in adults.

Whether dwarfism can be due to the blood condition, or whether, as appears more probable in the light of more recent knowledge, both are related to a common cause must remain open to doubt, as practically all the recorded cases of Addisonian pernicious anæmia occurring in children to which Drs. Vaughan and Hunter have referred have died of the disease before obvious changes in growth could have occurred.

Considerations such as those raised by Drs. Vaughan and Hunter in their letter tend to obscure the point that the facts of the case offer no justification for its inclusion as a case of cœliac disease.

I am, Sir, yours faithfully,

Grosvenor-street, W., May 15th, 1932. J. W. SHACKLE.

UNDULANT FEVER.

To the Editor of THE LANCET.

SIR,—You may consider it profitable to add to reports of *abortus* fever in this country by publishing a record of four cases detected in this area of Lancashire between September, 1930, and April, 1932. In this laboratory, during that period, 60 sera have been searched for agglutinins against the enteric group. Six significant results have been obtained and confirmed clinically or by culture as typhoid or paratyphoid B fever. Forty-five of the above sera were searched for agglutinins against *Brucella abortus* and *melitensis*, using Oxford standard suspensions. Five positive results have been obtained, four significant, one insignificant. The average "reduced" titre of the significant results is 500, the insignificant figure being 12. The corresponding figures for the full titres are 1060 and 25. Of the significant results, two were suspected before the sera were obtained, two were unexpected in cases of unexplained fever. All four cases, when reviewed, conformed with *abortus* fever. One case was the child of a farmer, in whose herd of cows was infectious abortion. In no other case was there indication of the source of infection. In no case was obtained a positive culture.

I am, Sir, yours faithfully,

F. B. SMITH.

Pathological Laboratory, Royal Infirmary, Preston, May 13th, 1932.

THE HEALTH OF HENRY VIII.

To the Editor of THE LANCET.

SIR,—In his interesting work upon Henry VIII., reviewed in your issue of May 14th (p. 1077), Mr. Chamberlin denies that the bluff king suffered from syphilis, thereby giving the lie direct to the late Dr. Maclaurin's conclusions set forth in his two books, "Post Mortem" and "Mere Mortals." Since Prof. Chamberlin is not himself a medical man, it may interest those of your readers who may be unacquainted with Dr. Maclaurin's books to learn the main points of the latter's arguments.

Dr. Maclaurin ("Post Mortem," p. 14), after pointing out that, following the return of Columbus's men, syphilis "ran like a whirlwind through Europe," sums up his evidence beforehand with the words: "It is impossible to doubt that Henry contracted it in his youth; the evidence will become clear to any doctor as we proceed." He mentions, en passant, the absurd charge made against Wolsey of giving the King syphilis by whispering in his ear and points out that the Cardinal had several healthy illegitimate children, adding, "On the whole it is possible that Henry caught the disease in the usual way."

In "Mere Mortals" (pp. 49–50), Dr. Maclaurin formulates his diagnostic reasons under six heads, which may be briefly summarised as follows: (1) The extraordinary number of premature births and dead children from two of his wives, one of whom was young and healthy. The issue by Katherine of Aragon was as follows: A stillbirth in 1510, Henry 1511 (lived six weeks), miscarriage 1513, premature male 1514, Mary 1516, two miscarriages 1517, and a stillborn son 1518. Anne Boleyn bore Elizabeth 1533 and a stillborn son 1536. (2) The poor health of at least three of his children, Mary, Edward VI., and the Duke of Richmond. To these I shall return later. (3) The terrible mental, moral, and physical degeneration which set in in Henry's early middle age. (4) The facts given in the *British Medical Journal* in 1910:—"From being an able and athletic man he had become a mass of loathsome infirmities. . . . His legs were swollen and covered with festering sores, causing an unbearable stench." (5) The sinus in his leg, which "seems to have been syphilitic periostitis occurring in an essentially neurotic man." (6) Death in stupor at the comparatively early age of 55. In detailing these points, Dr. Maclaurin wisely remarks, "Not any single one of these is indubitable evidence of syphilis, but taken altogether there is no other reasonable explanation," and he suggests that Henry's case may be one of those in which lack of early treatment, combined with worry and overstrain, may "go tragically wrong in the end."

Henry's unhealthy children present, perhaps, the most difficult problem. On the one hand we have Edward VI. who is stated to have died of consumption. It was, however, a consumption in which the boy's legs swelled, his complexion grew sallow, his hair fell out, and the terminal joints of his fingers fell off (suggestive of syphilitic dactylitis). Dr. Maclaurin, while hazarding a guess "that it was syphilis of the lung that killed him," plausibly suggests that, as in many other examples, it was a case in which the tuberculosis was complicated with congenital syphilis.

With regard to Mary, I remember how, when first I saw the portrait preserved in Winchester Cathedral, I was struck by its obvious resemblance to a case of congenital syphilis. Later I read somewhere, but cannot recall the source, that Philip of Spain complained of the disgusting odour from her nose. Naturally I was interested to find Dr. Maclaurin ("Mere Mortals," p. 81 ff.) drawing attention to the facts that she was a sickly child, suffered from severe headaches and defective vision (which Sir Clifford Allbutt suggested as possible interstitial keratitis). Mary died suddenly at 42, supposedly of ovarian tumour. Dr. Maclaurin remarks that "Any doctor looking at the portrait of her wizened, lined, and prematurely aged face would probably say 'That woman must have been a hereditary syphilitic,' especially if he knew the history of Henry VIII."

On the other hand, there are Elizabeth and the Duke of Richmond, in whom there certainly appears no evidence of syphilis. The latter, "Henry Fitzroy," was born in 1519, at the period in which Katherine of Aragon was having miscarriages and stillbirths, and when Henry was 18. Richmond was physically weak after the spring of 1536 and died of consumption July 23rd of that year, having suffered from hæmoptysis since Anne Boleyn's execution in May, the last occasion that he appeared in public. Both Henry Fitzroy and Elizabeth, born 1553, when Henry was 42, make the question of syphilis doubtful, but it is just possible that neither of them were the King's children. Into this it is, perhaps, best not to enter.

It may certainly be said, from the standpoint of the legal mind, that the question of Henry's syphilis is "non-proven," but, in the face of Dr. Maclaurin's arguments, backed up by his vast clinical experience on the subject, I do not think it can be summarily dismissed by a layman without protest.

I am, Sir, yours faithfully,

MACLEOD YEARSLEY.

Harley-street, W., May 16th, 1932.

THE GALL-BLADDER AND CARDIAC PAIN.

To the Editor of THE LANCET.

SIR,—Dr. C. H. Miller's paper in your issue of April 9th (p. 767) recalls to my mind a case which suggests a peculiar relationship between gall-bladder and heart. A sturdy hard-working man of 60 was seized one afternoon in his home with the excruciating pain characteristic of biliary colic—the first and only attack. The gall-bladder point was extremely tender on palpation. Morphia and atropine gave relief. To my surprise on putting my fingers on his pulse, this was totally irregular. Auscultation confirmed a complete arrhythmia. Digitalis was given. Twenty-four hours later normal rhythm had returned and remained. There was no detectable cardiac disease; vessel walls were somewhat thickened; blood pressure not elevated. The patient insisted on resuming his work a few days later, and during a period of three years following had no further trouble. I lost touch with him after that, but I believe he continues to enjoy robust health, four and a half years after this occurrence. In this case the biliary colic appears to have been directly responsible for the alarming disturbance of the heart's rhythm, but there was no cardiac pain.

I am, Sir, yours faithfully,

MALCOLM E. J. STALKER

Roquebrune, Cap Martin, France, May 3rd, 1932.

PUBLIC HEALTH INTELLIGENCE.

To the Editor of THE LANCET.

SIR,—May I through the courtesy of your columns bring to the notice of public health administrators the facilities that exist in the Health Organisation of the League of Nations for the supply of information relating to the detailed application of different public health methods in various countries. In addition, comparative information is available with regard to epidemiological statistics and public health legislation. The Health Organisation is willing to supply, as far as possible, data on the above branches of preventive medicine.

Inquiries are however limited to those from the heads of large administrations or the heads of scientific institutions, who should indicate the purpose for which the information is required, in view of the amount of work that unconsidered requests necessarily involve. Furthermore, inquiries should be limited to information that is not already in the medical press. All inquiries should be addressed to the Medical Director, Health Section, marked "Public Health Intelligence," League of Nations, Geneva, Switzerland.

I am, Sir, yours faithfully,

LUDWIK RAJCHMAN,
Medical Director, Health Section,
Geneva, May 2nd, 1932. League of Nations.

CORRIGENDUM.—In Dr. Hernaman-Johnson's letter last week on the Treatment of Osteo-arthritis the word hyperthymic in line 8 should read *hypertrophic*.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS.

Children and Young Persons Bill.

ON Thursday, May 12th, in the House of Commons the Children and Young Persons Bill was considered on Report and read the third time.

Whitsuntide Adjournment.

On Friday, May 13th, both Houses of Parliament adjourned for the Whitsuntide recess. The House of Commons will reassemble on Monday, May 23rd, and the House of Lords on Wednesday, May 25th.

HOUSE OF COMMONS.

WEDNESDAY, MAY 11TH.

Workmen's Compensation in the Colonies.

Mr. HICKS asked the Secretary for the Colonies what steps had been taken in British Colonies and Protectorates to give effect to the provisions of the conventions on workmen's compensation (accidents and diseases) and on sickness insurance, adopted at the seventh and tenth conferences of the International Labour Organisation.—Sir P. CUNLIFFE-LISTER replied: Three conventions relating to workmen's compensation were adopted at the seventh session of the International Labour Conference. Of these, the convention relating to workmen's compensation for accidents has not been ratified in respect of the United Kingdom. The question of applying this convention to the British Colonies and Protectorates, in accordance with the provisions of Article 421 of the Treaty of Versailles, does not therefore arise. The convention relating to equality of treatment for national and foreign workers in the matter of workmen's compensation has been substantially applied in the dependencies in which workmen's compensation legislation already exists, of which particulars were given in my reply to a question on March 9th. The convention relating to workmen's compensation for occupational diseases has been applied (with suitable local variations in the diseases covered) in Malta and (so far as non-native workmen are concerned) in Northern Rhodesia. The administration of compulsory sickness insurance schemes, as contemplated in the two conventions which were adopted at the tenth session of the International Labour Conference, is not at present practicable in the Colonies and Protectorates. In the majority of the dependencies, however, free medical and hospital treatment is provided either by the Government, or (in some dependencies under statute) by large employers of organised labour. In other words, certain of the objects of these conventions are to a great extent attained without any specific contributions from the persons who derive benefit from the facilities provided.

Prison Dietary.

Mr. RHYS DAVIES asked the Home Secretary in what prisons there had been complaints and disturbances about the quality of the food supplied to prisoners; and if he would send an officer of his department to inspect the food in all prisons under his control at intervals during the

year.—Sir HERBERT SAMUEL replied: Special attention has of recent years been devoted to the improvement of prison dietaries, and to securing a proper standard of skill and care in their preparation. Officers of my department regularly inspect the food and the kitchens, which are also seen by the visiting justices on their visits. It would be impracticable to collect particulars of complaints made by individual prisoners about their food, but I am satisfied that there is no general cause for complaint as regards either the quality or the preparation. There has, apart from the events of January last at Dartmoor, been no disturbance at any prison, nor any general complaint arising from dissatisfaction with the food.

Suspected Small-pox on the "Tuscania."

Mr. GROVES asked the Minister of Health whether he could state the date the child supposed to be suffering from small-pox was landed at Suez from the s.s. *Tuscania;* the date his department was informed of this fact; the date it was ascertained at Suez that the disease was chicken-pox; the date the department was notified of the change in diagnosis; and whether this information was sent by wireless to the captain of the s.s. *Tuscania* from Suez or from his department.—Sir E. HILTON YOUNG replied: The child was landed at Suez on April 22nd. The notification was received in my department on the 23rd. The diagnosis of chicken-pox was made by the Suez Hospital authorities on the 25th. My department was informed of this diagnosis, in reply to an inquiry by telegraph, on the 30th. The revised diagnosis was not notified by my department to the master of the *Tuscania*, and I have no information whether it was so notified from Suez.

THURSDAY, MAY 12TH.

The Medical Stamp Duty.

Sir ALFRED BEIT asked the Chancellor of the Exchequer whether, in view of the decline in the yield of the stamp duties, he would now consider amending the Medicine Stamp Acts with the object of rendering all medicines protected by registered names or trade marks liable to duty, even if they were of a known, admitted, or proved nature.—Mr. CHAMBERLAIN (Chancellor of the Exchequer) replied: I do not think that my hon. friend's suggestion can be accepted, but I am having the present position under the Medicine Stamp Acts examined in order to see whether some amendment of those Acts is desirable.

Public Health Law Consolidation.

Mr. LIDDALL asked the Minister of Health when the Committee on Local Government and Public Health Law Consolidation, appointed Dec. 8th, 1930, would present its report.—Sir E. HILTON YOUNG replied: I understand that this committee hopes to issue an interim report covering the consolidation of the law of local government by the end of the present year. I cannot, at present, state when its final report will be presented.

FRIDAY, MAY 13TH.

Poison Gas Experiments.

Sir ROBERT GOWER asked the Financial Secretary to the War Office what was the number of horses, dogs, and other animals respectively used for poison gas experiments at Porton, Cambridge, and elsewhere in Great Britain respectively during the years 1930, 1931, and the first four months of 1932 respectively.—Mr. DUFF COOPER replied: The number of horses, dogs, and other animals used for chemical defence experiments at the Chemical Defence Research Establishment, Porton, and the Physiological Laboratory, Cambridge, during the periods referred to was as follows:—

—	Physiological Laboratory, Cambridge.			Chemical Defence Research Establishment, Porton.		
	Dogs.	Horses.	Other animals.	Dogs.	Horses.	Other animals.
1930	—	—	85	—	8	711
1931	—	—	11	—	—	579
1932 (Jan.–April)	—	—	—	—	—	127

No other laboratories are concerned.

MEDICAL NEWS

University of Cambridge.

On May 13th the following degrees were conferred:—

M.D.—R. K. Debenham.

M.B. & B.Chir.—H. B. Padwick.

English Conjoint Examining Board.

At the final examination, held from April 4th to 27th, the following candidates were approved in the undermentioned subjects, but are not yet eligible for diplomas.

Medicine.—F. C. Anglor, Liverpool; J. D. H. Bird, King's Coll.; R. W. Blakey, Leeds; Ethel D. M. Brook, Royal Free; B. Cates, St. Bart.'s; P. K. Chanmugam, Ceylon and King's Coll.; E. M. Clark, St. Bart.'s; H. Cohen, Middlesex; T. A. Connold, St. Thomas's; H. G. N. Cooper, Oxford and Guy's; P. T. Cooper, Camb. and St. George's; C. F. Cumings, King's Coll.; A. L. Davies, Middlesex; L. S. De Silva, King's Coll.; L. W. B. Dobbin, Camb. and London; Phyllis M. Dobbs, Royal Free; F. R. Edwards, Liverpool; Helen M. Evans, Royal Free; R. C. Evans, Univ. College; W. J. M. Evans, Cardiff; F. E. Fletcher, Bristol; D. H. Fulton, King's Coll.; Getel Gimpelson, King's Coll.; Phyllis N. Greene, Royal Free; J. C. Hardy, Univ. College; W. Hunt, Camb. and St. Bart.'s; J. E. Jones, Liverpool; Katherine M. Jones, Royal Free; M. Katz, St. Bart.'s; B. S. Kaushal, Punjab and Middlesex; L. O'N. Knox, Guy's; Peggy Levi, Birmingham; S. Livni, London; Barbara R. Lockwood, Royal Free; J. L. Lovibond, Camb. and Middlesex; Monica Low, Royal Free; I. R. W. Merrick, King's Coll.; G. R. Morgan, St. Bart.'s; R. B. Munro, Univ. College; Elizabeth M. Ogden, King's Coll.; N. C. R. M. Perumal, Ceylon and West London; Joyce A. Pope, Manchester; L. E. J. Poulier, Ceylon and St. George's; J. F. P. Price, King's Coll.; T. G. Richards, Liverpool; R. H. Rushton, King's Coll.; B. F. B. Russell, St. Bart.'s; H. B. C. Sandiford, St. Thomas's; R. T. Shipman, St. Thomas's; F. Summers, King's Coll.; Enid A. Taylour, Bristol; Patricia I. Unsworth, Liverpool; C. U. Wickham, Birmingham.

Surgery.—T. Abdel Rahman, Royal Free; H. Ackers, Liverpool; R. M. Alford, St. Thomas's; N. Bakhru, Bombay and London; J. B. Bamford, St. Bart.'s; V. H. Barnett, Univ. College; C. G. Batty-Smith, Camb. and St. George's; G. T. Bevir, Bristol; S. E. Birdsall, Camb. and St. Bart.'s; A. Birnbaum, London; Marjorie Bolton, Royal Free; E. Braithwaite, Oxford and London; T. Bromberg, St. Mary's; D. G. W. Brown, Liverpool; W. Bullock, Liverpool; L. I. S. Campbell, Camb. and Guy's; W. M. Capper, St. Bart.'s; A. Carling, Oxford and St. Thomas's; A. C. Cox, Oxford and Guy's; S. M. Cruz, Birmingham; F. J. Curtis, Camb. and Guy's; Phyllis E. Dain, Birmingham; D. T. Davies, Cardiff and St. Bart.'s; D. J. Dawson, St. Bart.'s; M. E. Disney, London; M. H. Evans, Oxford and Middlesex; S. T. Falla, London; T. B. Field, Univ. College; R. J. K. Fleming, London; F. E. Fletcher, Bristol; Fanny C. Fraser, Royal Free; A. H. Galley, King's Coll.; T. H. Gardener, London; A. K. Guha, Manchester; M. A. F. A. Hadi, Birmingham; M. Hafezi, St. Mary's; H. G. Hanley, Liverpool; P. L. S. Hatton, St. Bart.'s; L. P. Hodgson, Birmingham; E. K. Hole, St. Bart.'s; Phyllis L. Holliday, Camb. and Leeds; H. D. Holt, Univ. College; J. S. Horsley, London; A. W. J. Houghton, St. Bart.'s; T. G. Hovenden, Oxford and St. Thomas's; J. Howkins, Middlesex; G. S. N. Hughes, St. Mary's; M. G. H. Hughes, London; J. L. S. James, Bristol; J. R. E. James, London; S. O. Jones, King's Coll.; H. B. D. Kettlewell, Camb. and St. Bart.'s; M. Klass, St. Mary's; R. G. Knight, Camb. and Guy's; A. Kobylivker, Guy's; Peggy Levi, Birmingham; S. Levontin, London; R. S. Lewis, Camb. and St. George's; L. H. B. Light, Camb. and St. Thomas's; J. N. McArthur, Univ. College; J. D. Macleod, St. Thomas's; H. A. Magnus, St. Bart.'s; R. L. Mansi, St. Bart.'s; G. A. Miller, Camb. and Guy's; C. J. Morgan, St. Bart.'s; C. C. Morgans, Camb. and St. Thomas's; H. F. Moseley, Oxford and St. Thomas's; G. H. C. Ovens, St. Mary's; J. W. M. Owen, St. Mary's; R. W. Pickering, Guy's; W. S. Pitt-Payne, Guy's; G. A. Powell-Tuck, Birmingham; H. G. Rees, Middlesex; A. E. A. Ridgway, Charing Cross; T. J. Ryan, St. Bart.'s; A. G. Salaman, Camb. and London; F. W. Shepherd, Camb. and St. Bart.'s; J. Shields, Camb. and St. Bart.'s; V. C. Snell, Camb. and St. Bart.'s; E. J. Somerset, King's Coll.; W. H. C. Spooner, St. Mary's; W. G. Stanford, Guy's; J. E. Stephens, St. Thomas's; F. R. Store, Univ. College; K. W. Stroude, Liverpool; E. J. Stubbs, Guy's; M. M. Syddiq, Punjab; N. S. Taylor, King's Coll.; H. R. Thompson, Camb. and London; R. E. S. Turner, Oxford and St. Bart.'s; E. A. Webb, Guy's; R. F. Winckworth, St. Thomas's; K. E. L. Yuill, Birmingham.

Midwifery.—F. C. Abeyesekera, King's Coll.; H. Ackers, Liverpool; C. F. S. Aiken, Oxford and Middlesex; I. G. Anderson, King's Coll.; I. B. Asafu-Adjaye, Univ. College; H. J. B. Atkins, Oxford and Guy's; Margaret M. Baddeley, Royal Free; R. H. Bailey, Camb. and King's Coll.; Helen Baker, Royal Free; W. N. W. Barns, Univ. College; S. A. Bather, Oxford and Leeds; R. Bennett, Oxford and St. Bart.'s; J. G. Bentley, St. Bart.'s; J. H. Bentley, Camb. and Middlesex; R. N. Bhatia, Camb. and St. Bart.'s; H. R. Bickerton, Sydney; S. E. Birdsall, Camb. and St. Bart.'s; A. R. Boney, St. Bart.'s; A. Bowen-Davies, Camb. and Guy's; C. G. Bree, Univ. College; D. G. W. Brown, Liverpool; T. J. K. Brownlees, St. Bart.'s; W. Bullock, Liverpool; H. W. Burge, King's Coll.; R. J. Buxton, Camb. and St. George's; H. F. Chard, St. Thomas's; H. K. Childs, St. Thomas's; C. A. Clarke, Camb. and Guy's; C. C. Cobb, Oxford and St. George's; J. C. Colbeck, Guy's; Gwendolen N. Cook, Royal Free; D. M. Cooper, St. Thomas's;

Anna V. K. Cyriax, Univ. College; D. J. Dawson, St. Bart.'s; Doris A. Dean, Birmingham; A. K. Deb, Calcutta; C. J. D'Monte, Middlesex; E. J. Dennison, St. Thomas's; L. W. B. Dobbin, Camb. and London; A. G. Donald, Guy's; J. F. H. Eagles, Bristol; F. R. Edwards, Liverpool; Evelyn M. Eggleton, Univ. College; H. L. Ellis, Middlesex; Helen M. Evans, Royal Free; W. J. M. Evans, Cardiff; L. H. Evelyn, Guy's; T. B. Field, Univ. College; R. J. K. Fleming, London; Fanny C. Fraser, Royal Free; L. B. Furber, St. Bart.'s; D. W. Geidt, Oxford and Guy's; S. K. Ghosh, Middlesex; W. G. Gill, Camb. and Guy's; T. D. M. Gillies, St. Thomas's; G. P. Goodwin, Camb. and St Mary's; D. R. Gray, Camb. and Charing Cross; N. C. Griffin, Leeds; A. V. Griffiths, Cardiff; A. K. Guha, Manchester; G. L. Hardman, St. George's; K. W. Hardy, London; Freda M. B. Harmer, Royal Free; E. H. C. Harper, St. Thomas's; P. G. F. Harvey, St. Bart.'s; O. S. Heyns, Univ. College; H. M. Hodgkin, Camb. and Guy's; L. P. Hodgson, Birmingham; T. R. Hornby, Manchester; T. G. Hudson, St. Thomas's; D. M. Hughes, Cardiff; M. G. H. Hughes, London; T. P. E. Hughes, Oxford and Middlesex; W. H. Hughes, St. Mary's; Elizabeth M. Hutton, Royal Free; H. V. D'A. Iles, Guy's; Ursula Y. im Thurn, Univ. College; J. R. E. James, Cardiff and London; D. K. Jardine, St. Bart.'s; Ruby D. Johnson, Oxford and Univ. College; Katherine M. Jones, Royal Free; Nellie E. Jones, Cardiff; A. H. Knowles, Camb. and St. Thomas's; Hilda I. Lanceley, King's Coll.; C. B. Lanyon, Univ. College; M. Lee, St. Thomas's; Z. Lefkovitz, Cardiff; F. X. Letellier, Univ. College; B. S. Lewis, St. Bart.'s; L. A. Lewis, Cardiff; W. Lewis, Camb. and Guy's; W. L. Lister, St. Mary's; D. B. McGavin, Camb. and St. Bart.'s; J. C. McGregor, Charing Cross; B. M. McOwan, St. Bart.'s; G. A. Mais, St. Thomas's; Gwendolen E. Matthews, Westminster; R. F. Matthews, Middlesex; J. B. Mee, Birmingham; H. N. Miles, King's Coll.; R. J. G. Morrison, St. Bart.'s; H. Mower, St. George's; J. B. C. Murdoch, Camb. and Guy's; L. R. Norsworthy, St. Bart.'s; R. M. M. C. Orpwood, St. Bart.'s; E. D. Page, St. Mary's; R. Q. Parkes, Camb. and St. Thomas's; E. B. Pawson, Camb. and St. Bart.'s; R. V. Payne, Camb. and Guy's; C. J. P. Pearson, St. Thomas's; N. C. R. M. Perumal, Ceylon and West London; G. E. Phillips, Cardiff; G. Phipps, St. Thomas's; A. G. Potts, Guy's; A. U. Prodhan, Calcutta; R. G. Pulvertaft, Camb. and St. Thomas's; G. Ransome, St. Bart.'s; T. G. Richards, Liverpool; A. E. G. Ridgway, London; A. H. W. Roffey, King's Coll.; Constance M. Rostron, Manchester; N. S. Sablin, St. Bart.'s; C. A. J. Sampson, St. Thomas's; R. D. Scriven, Westminster; A. L. Secchi, St. Thomas's; S. S. Selladurai, Ceylon and Middlesex; S. K. Sen, Camb. and St. Bart.'s; F. M. Shaw, Royal Free; G. H. Shaw, Camb. and St. Thomas's; J. W. V. Sheldon, Guy's; S. C. Shore, Guy's; J. P. Singer, Camb. and Guy's; H. G. Stanton, St. Bart.'s; K. W. Stroude, Liverpool; E. J. Stubbs, Guy's; N. S. Taylor, King's Coll.; D. M. E. Thomas, St. Bart.'s; F. W. Thomas, Cardiff; R. W. H. Thomas, St. Mary's; W. E. Thomas, Cardiff; H. R. Thompson, Camb. and London; A. S. Thorley, Univ. College; H. A. Treble, Oxford and Guy's; T. M. Tyrrell, Camb. and St. Thomas's; Annie M. B. Walker, Bristol; E. O. Walker, Camb. and Bristol; G. L. Ward, Camb. and St. George's; C. J. T. Watson, Camb. and St. George's; G. C. Welply, St. Mary's; W. H. Whiles, King's Coll.; C. U. Wickham, Birmingham; Albertine L. Winner, Univ. College; H. R. I. Wolfe, St. Thomas's; C. W. B. Woodham, St. Bart.'s; A. R. Woodforde, St. Bart.'s.

Pathology.—T. Abdel-Rahman, Royal Free; Winifred L. Acraman, Cardiff; P. H. Addison, St. Mary's; W. O. Baird, Middlesex; J. B. Bamford, St. Bart.'s; R. Bennett, St. Bart.'s; J. G. Bentley, St. Bart.'s; R. N. Bhatia, St. Bart.'s; J. R. Blackburne, St. Bart.'s; G. W. Blomfield, Leeds; H. W. Burge, King's Coll.; S. J. Chesser, Camb. and St. Thomas's; E. L. Cohen, Camb. and St. Bart.'s; H. Cohen, Middlesex; Gwendolen N. Cook, Royal Free; S. W. Cooper, St. Mary's; F. E. Corea, St. Bart.'s; H. Creditor, Univ. College; A. R. Cutlack, St. Bart.'s; A. L. Davies, Middlesex; D. T. Davies, Cardiff and St. Bart.'s; J. Davies, Cardiff and London; E. Davis, Manchester; W. Dean, Westminster; A. G. Donald, Guy's; R. M. Ebeid, Birmingham; M. H. Evans, Oxford and Middlesex; L. H. Evelyn, Guy's; E. D. Falconer, Guy's; T. Fichardt, Guy's; J. Fishman, London; R. J. K. Fleming, London; J. L. Freer, Guy's; S. K. Ghosh, Middlesex; G. P. Goodwin, Camb. and St. Mary's; J. L. Hamilton-Paterson, Univ. College; K. W. Hardy, London; B. A. E. Harley, Middlesex; B. P. Harris, Camb. and Middlesex; P. G. F. Harvey, St. Bart.'s; E. K. Hole, St. Bart.'s; J. Holme, Manchester; H. D. Holt, Univ. College; R. A. Hooper, Camb. and St. Thomas's; J. Howkins, Middlesex; M. G. H. Hughes, London; W. H. Hughes, St. Mary's; Elizabeth M. Hutton, Royal Free; J. R. E. James, London; W. L. James, Guy's; A. G. Johnson, Guy's; Grace M. Jones, Cardiff; Nellie E. Jones, Cardiff; G. E. Kerr, King's Coll.; B. H. Kirman, King's Coll.; R. G. Knight, Camb. and Guy's; A. Kobylivker, Guy's; C. B. Lanyon, Univ. College; S. B. Lavine, Middlesex; J. B. Lee, Manchester; A. R. R. Le Fleming, Camb. and St. Thomas's; C. A. Lewis, Camb. and King's Coll.; Vida L. Liddell, Leeds; M. B. Lindsay, St. Thomas's; B. McArdle, Guy's; J. J. McCann, St. Thomas's; R. G. Macfarlane, St. Bart.'s; B. M. McOwan, St. Bart.'s; J. I. Maran, Univ. College; J. B. Maurice, Oxford and St. Mary's; F. S. A. Maw, Camb. and King's Coll.; C. R. Mayou, Birmingham; R. V. F. Mercer, Camb. and St. Bart.'s; H. N. Miles, King's Coll.; K. O. Milner, Leeds; F. C. Moll, Westminster; R. J. G. Morrison, St. Bart.'s; J. A. Nunn, Oxford and St. Bart.'s; Elizabeth M. Ogden, King's Coll.; T. G. Osler, St. Mary's; M. W. L. Owen, Camb. and St. Mary's; E. B. Pawson, Camb. and St. Bart.'s; G. E. Phillips, Cardiff; A. G. Potts, Guy's; F. J. P. Price, King's Coll.; G. A. Ransome, St. Bart.'s; H. G. Rees, Middlesex; T. G. Richards, Liverpool; A. E. G. Ridgway, London; T. J. Ryan, St. Bart.'s; H. B. C. Sandiford, St. Thomas's; R. D. Scriven, Westminster; F. W. Shepherd, Camb. and St. Bart.'s H. S. Shoham, Univ. College; J. P. Singer, Camb. and Guy's; F. J. Sladen, Middlesex; A. Smith, Leeds; B. W. Smith, Guy's; G. S. Steele-Perkins, Camb. and Guy's; M. Sternberg, Middlesex; J. N. Strauss, Manchester; Annie C. Taylor, Camb. and Univ. College; W. E. Thomas, Cardiff; A. S. Thorley, Univ. College; J. A. van Rooyen, St. Bart.'s; W. H. C. Watson, Camb. and St. Thomas's; W. H. Whiles, King's Coll.; F. C. H. White, Camb. and Birmingham; I. Whittington, St. George's; H. M. Williams, St. Bart.'s; G. Wilson, Guy's; J. I. Wilson, Univ. College; T. G. R. Woods, St. Bart.'s; H. W. Wykes, Middlesex; G. Zeidenfeld, St. Bart.'s.

Royal College of Surgeons of England.

A meeting of the Council of the Royal College of Surgeons was held on May 12th, with Lord Moynihan, the President, in the chair.

Diplomas of membership were granted to 154 of the 157 candidates whose names were given in our issue of May 7th as recipients of the L.R.C.P. (excepting S. N. Barker, A. L. Kenyon, and R. S. Sandhu), and also to F. H. Bentley, Manchester. A diploma in gynæcology and obstetrics was granted jointly with the Royal College of Physicians to D. P. de Villiers.

It was announced that the Lister medal for 1933 for distinguished contributions to surgical science had been awarded to Sir Charles Ballance, who will deliver the Lister memorial lecture at the College on some date in 1933.—It was reported that a bequest to the College by the late Mr. J. W. Groves had now become payable. The bequest is expected to amount to about £10,000, and the interest derived from it is intended for the purposes and objects of the museum, including the purchase of collections.

Diploma in Medical Radiology.

Regulations have just been instituted by the Royal College of Physicians of London and the Royal College of Surgeons of England for obtaining the diploma in Medical Radiology (D.M.R., R.C.P. & S. Eng.). The examination comprises: Part I.—Physics as applied to Radiology. Part II.—Medical Radiology, with special reference to its clinical application, including Radiodiagnosis, X Ray Therapy and Radium Therapy. Both parts will be held during the months of June and December. Eligible are candidates holding a qualification in medicine, surgery, and midwifery registrable in the British Register, or the M.D., or M.B., B.S. degrees of any University recognised by the examining board. The course of study extends over one academic year (nine months) of full-time study subsequent to the attainment of a recognised qualification. Appended to the regulations is a syllabus for Part I. No syllabus is issued for Part II. of the examination.

Royal College of Surgeons of Edinburgh.

At a meeting of the College on May 16th, with Mr. J. W. Dowden, the President, in the chair, the following 14 successful candidates (out of 82 entered) who passed the requisite examinations between Jan. 1st and 11th were admitted Fellows:—

Charles Bevan Carew Anderson, M.B. Edin.; Peter Melville Ballantyne, M.B. Toronto; John Bruce, M.B. Edin.; Santosh Kumar Chatterji, M.B. Calcutta; Daniel Peter de Villiers, M.B. Liverp.; David McKee Dickson, M.B. N.Z.; David Gamsu, M.D. Durh.; Edward Roger Graham Kirkpatrick, M.B. Sydney; Hyman Barnett Lieberman, M.B. Sydney; William Patrick, M.B. Glasg.; Lawrence Lees Playfair, M.D. Q.U. Ontario; George Largie Reid, M.B. Edin.; John Knox Stafford Thomson, M.B. Dub.; and Ronald Lister Verco, M.B. Adelaide.

The following candidates received the higher dental diploma:—

W. G. Middlemass, David Logie, G. B. Schofield, and C. L. Frizell.

The Liston Victoria jubilee prize, instituted in 1887 by Dr. Robert Halliday Gunning, and awarded triennially for the greatest benefit done to practical surgery by a Fellow or licentiate of the College, was awarded to Norman McOmish Dott, F.R.C.S. Edin.

Society of Medical Officers of Health.

Fever Hospitals Group.—The annual meeting of this group will be held at 1, Upper Montague-street, London, W.C., at 3.30 P.M. on Friday, May 27th, when Mr. W. H. Hobday, F.R.I.B.A., will read a paper on Isolation Hospital Construction.

Royal Northern Group of Hospitals.

A series of post-graduate lectures and demonstrations, to be given at the Royal Northern Hospital and the Royal Chest Hospital during the summer, begins next Monday with a week's "intensive" course. This will consist of two lectures each afternoon, with teaching in the wards and elsewhere at other times. A similar course will be held from June 13th to 17th. A full programme, including particulars of the ordinary weekly lectures on Tuesday or Wednesday afternoons, may be had from Dr. E. G. B. Calvert, dean of the hospital, Holloway-road, N. 7.

University of Oxford.

The Herbert Spencer lecture for 1932 will be given by Mr. R. A. Fisher, F.R.S., at the University Museum on June 8th. His subject is the Social Selection of Human Fertility.

Journées Médicales de Bruxelles.

This congress will hold its twelfth meeting from June 25th to 28th, under the presidency of Prof. Fernand Héger. The secretary-general is Dr. René Beckers, 141 rue Belliard, Brussels.

South-West London Medical Society.

Sir Humphry Rolleston will deliver the Bolingbroke lecture before this society at 9 P.M. on Wednesday, May 25th, at the Bolingbroke Hospital, Wandsworth Common. His subject will be the Advances in Medicine during the last Fifty Years.

Memorial to Dame Mary Scharlieb.

A ward will be dedicated and a tablet unveiled to the memory of Dame Mary Scharlieb, M.S., at the Royal Free Hospital at 4.45 P.M. on Tuesday, May 31st. The speakers will be Lady Barrett, Dr. Rosa Clark, and Dame Louise McIlroy; the ward will be dedicated by the Bishop of London; and the tablet will be unveiled by Lord Riddell, president of the hospital.

British Institute of Philosophy.

Sir Herbert Samuel, Secretary of State for Home Affairs, will deliver a presidential address, entitled Philosophy and the Ordinary Man, at 8.30 P.M. on Wednesday, May 25th, at University College, Gower-street, London, W.C. Tickets may be had from the Director of Studies, University Hall, 14, Gordon-square, W.C. 1.

Glasgow University Club, London.

The annual summer dinner of this club is to be held at the Café Royal, 68, Regent-street, W., at 7.15 for 7.30 P.M., on Friday, June 10th. The chair will be taken by the Very Reverend Sir George Adam Smith, principal of the University of Aberdeen. Any Glasgow University men who though not members of the club desire to attend are asked to communicate with the hon. secretaries, 62, Harley House, N.W. 1.

The Stamford Infirmary Difficulty.

Dr. G. Staveley Parker, who on March 30th last was dismissed from the staff of the Stamford and Rutland Infirmary for alleged breaches of the rules, and reinstated a fortnight later on a vote by a majority of the governors, has again been dismissed by a majority of 42 to 13. By the same resolution his partner, Dr. J. Purce, was appointed assistant surgeon. Dr. Purce has, however, declined the appointment.

Conference on Sterilisation.

As already announced, a Conference on Voluntary Eugenic Sterilisation will be held at the Caxton Hall, Westminster, on May 23rd under the auspices of the Eugenics Society. The speakers will include Sir Thomas Horder, Dr. R. Langdon-Down, Mr. C. J. Bond, Dr. C. P. Blacker, Lord Riddell, Mrs. C. B. S. Hodson, Prof. A. M. Carr-Saunders, and Prof. R. Ruggles-Coates, and in the evening, at 8.30, there will be a session at which members of the public may express their views and ask questions. The secretary's address is 16, Mulberry-walk, London, S.W. 3.

Society for Relief of Widows and Orphans of Medical Men.

At the annual general meeting, held on May 11th, Mr. V. Warren Low presiding, it was reported that the total membership of the society is 282, made up of 160 life members, 121 ordinary members, and one honorary member. On Dec. 31st, 1931, there were 49 widows and 6 orphans in receipt of grants. Five widows died during the year. One came on the fund in 1887 and received in grants £3300, another in 1917 and received £925, another in 1920 and received £750, another in 1922 and received £750, and the fifth, who came on the fund in 1926, received £450. The annual grant to widows over 65 years of age was £75, to those under 65, £60. Each orphan under 16 received £50. In addition a Christmas present of £15 was made to widows over 75 years of age, and £10 to each widow under that age. Each orphan received £10. The Copeland Fund is for orphans over the age of 16, who, owing to some permanent disablement, are prevented from earning a livelihood. The grant from this fund is £30 per annum. The sum of £389 8s. was also paid to eight orphans who had reached the age of 16, to enable them to continue their education at school or to start on some professional or business career. The grants are practically the same as last year. Invested funds remain the same—namely, £140,700. No legacies were received during the year.

Medical Diary

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, May 23rd.—8 P.M., ODONTOLOGY. Annual General Meeting at the Royal College of Surgeons, Lincoln's Inn Fields, W.C. Election of Officers and Council. Demonstration: Sir Frank Colyer will show new specimens received in the Museum during the past year.

TUESDAY.—5 P.M., MEDICINE. Election of Officers and Council. 8 P.M., THERAPEUTICS AND PHARMACOLOGY. Discussion: Some Problems Concerning the Prevention and Treatment of Acute Rheumatic Infection. Openers: Dr. W. R. F. Collis, Dr. Carey F. Coombs, and Dr. W. H. Bradley.

THURSDAY.—8.30 P.M., UROLOGY. Election of Officers and Council. Paper: Mr. H. P. Winsbury-White: Perinephric Inflammation.

FRIDAY.—DISEASE IN CHILDREN. No meeting. 8 P.M., EPIDEMIOLOGY AND STATE MEDICINE. Election of Officers and Council. Paper: Sir Aldo Castellani: The Epidemiology of Some Typical Mycoses.

SATURDAY.—12.30 P.M., PHYSICAL MEDICINE. The Annual Summer Meeting will take place at Alton. Special demonstrations of cases and appliances at the Treloar Cripples' Hospital.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES, 11, Chandos-street, Cavendish-square, W.

FRIDAY, May 27th.—8.30 P.M., Dr. Otto May and Mr. H. E. Melville: The Attitude of Life Insurance Societies to Venereal Disease. A discussion will follow.

SOUTH-WEST LONDON MEDICAL SOCIETY.

WEDNESDAY, May 25th.—9 P.M. (at Bolingbroke Hospital, Bolingbroke-grove, Wandsworth Common), Sir Humphry Rolleston: Advances in Medicine During the Last Fifty Years. (Bolingbroke lecture.)

MEDICO-LEGAL SOCIETY.

THURSDAY, May 26th.—8.30 P.M. (at 11, Chandos-street, Cavendish-square, W.), Colonel L. W. Harrison: The Medico-legal Aspects of Venereal Disease, followed by a discussion.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, May 23rd, to SATURDAY, May 28th.—LONDON LIGHT AND ELECTRICAL CLINIC, Ranelagh-road, S.W. An evening course in Physical Medicine, Mon. and Wed. from 8 to 9 P.M. Demonstrations on cases.—CLINICAL PATHOLOGY, 10, Bedford-square, W.C. Epidiascope and laboratory demonstration by Dr. Knyvett Gordon on Wed. at 8.30 P.M., on Hæmorrhage.—ST. JOHN'S HOSPITAL, Leicester-square, W.C. Afternoon course in Dermatology. Clinical work at 2 P.M. and 6 P.M. daily. Lectures on Mond., Tues., Thurs., and Frid. at 5 P.M.—PRINCE OF WALES'S HOSPITAL, Tottenham, N.15. All-day course in Medicine, Surgery, and the Specialties. 10.30 to 4.30 P.M. daily. Operations, special demonstrations, lectures.—(The above courses are open only to Members of the Fellowship of Medicine.)

CHADWICK TRUST.

MONDAY, May 23rd.—5.15 P.M. (at the House of the Royal Society of Arts, John-street, Adelphi), Sir Ernest Graham-Little: Dermatology as an Outpost of Medicine (Malcolm Morris lecture).

ROYAL NORTHERN HOSPITAL, Holloway-road, N. (Intensive Course.)

MONDAY, May 23rd.—2.15 P.M., Mr. F. D. Saner: Selected Cases. 3.15 P.M., Mr. C. S. Lane Roberts: Some Drugs in Pregnancy and Labour.

TUESDAY.—2.15 P.M., Dr. E. G. B. Calvert: Recent Work on the Anæmias: Ætiology and Treatment. 3.15 P.M., Mr. Kenneth Walker: Renal Pain.

WEDNESDAY.—2.15 P.M., Dr. Bernard Schlesinger: Demonstration of Cases in the Children's Ward. 3.15 P.M., Dr. H. C. Semon: Case Demonstration.

THURSDAY.—2.15 P.M., Mr. Eric Lloyd: Bone Setting. 3.15 P.M., Mr. E. Wolff: Ocular Headache.

FRIDAY.—2.15 P.M., Dr. Claude Gouldesbrough: Fractures and Dislocations (continued). 3.15 P.M., Dr. P. O. Ellison and Dr. Sholto McKenzie: Pathological Investigations.

NATIONAL HOSPITAL, Queen-square, London, W.C.

MONDAY, May 23rd.—2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Kinnier Wilson: The Borderland of Epilepsy.

TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Martin: Hemiplegia.

WEDNESDAY.—2 P.M., Dr. Martin: Out-patient Clinic.

THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Critchley: Electrical Injuries of the Nervous System.

FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Dr. Walshe: Muscular Atrophy.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, May 27th.—4 P.M., Mr. H. Kisch: Nasal Obstruction.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.

WEDNESDAY, May 25th.—4 P.M., Mr. G. Perkins: Modern Tendencies in the Treatment of Non-pulmonary Tuberculosis.

ST. PAUL'S HOSPITAL, Endell-street, W.C.
WEDNESDAY, May 25th.—Dr. G. R. M. Cordiner: Urinary Symptoms. Radiological Interpretation.

ST. MARK'S HOSPITAL, City-road, E.C.
THURSDAY, May 26th.—4.30 P.M., Sir Charles Gordon-Watson: Diagnosis and Treatment of Carcinoma of the Colon.

ST. PETER'S HOSPITAL, Henrietta-street, Covent Garden, W.C.
WEDNESDAY, May 25th.—3 P.M., Mr. J. Swift Joly: Operation of Prostatectomy.

ST. JOHN'S HOSPITAL DERMATOLOGICAL SOCIETY.
WEDNESDAY, May 25th.—5 P.M. (at St. John's Hospital, 49, Leicester-square, W.C.), Clinical Cases.

LONDON JEWISH HOSPITAL, Stepney Green, E.
THURSDAY, May 26th.—4.15 P.M., Dr. David Krestin: Demonstration of Cases.

NATIONAL CENTRE AND POST-GRADUATE SCHOOL OF RADIOTHERAPY, Riding House-street, W.
WEDNESDAY, May 25th.—4.30 P.M., Mr. Ogier Ward: Bladder and Prostate.

ROYAL INSTITUTION, Albemarle-street, W.
FRIDAY, May 27th.—9 P.M., Sir Walter Morley Fletcher: New Conceptions of Medical Research.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.
MONDAY, May 23rd.—5 P.M., Dr. H. Haldin-Davis: Drug Eruptions.
TUESDAY.—5 P.M., Dr. J. E. M. Wigley: Napkin Area Eruptions.
THURSDAY.—5 P.M., Dr. A. M. H. Gray: Sclerema.
FRIDAY.—5 P.M., Dr. W. J. O'Donovan: Tuberculosis of the Skin.

UNIVERSITY OF BIRMINGHAM.
WEDNESDAY, May 25th.—4 P.M., Mr. C. J. Bond: Some Aspects of Human Biology. (Last William Withering Memorial Lecture.)

EYE INFIRMARY, Glasgow.
WEDNESDAY, May 25th.—4.15 P.M., Dr. A. J. Ballantyne and Dr. S. S. Meighan: Eye Cases.

Appointments

ELKINGTON, J. ST. C., M.B., B.Chir. Camb., M.R.C.P. Lond., has been appointed Physician to Out-patients, St. Thomas's Hospital.
RUSHWORTH, J. A., L.R.C.P. Lond., M.R.C.S., Assistant Tuberculosis Officer, Liverpool Health Department.
SIMPSON, N. C., M.D., Ch.B. Aberd., Certifying Surgeon under the Factory and Workshop Acts, Newmarket District.
WARBURTON, P. D., L.R.C.P. Lond., M.R.C.S., D.P.H., Honorary Surgeon, West of England Eye Infirmary, Exeter.

Vacancies

For further information refer to the advertisement columns.

Altrincham General Hospital.—Sen. and Jun. H.S. At rate of £150 and £120 respectively.
Banbury, Oxon, Horton General Hospital.—Res. M.O. At rate of £150.
Bedford County Hospital.—Second H.S. At rate of £140.
Benenden, Kent National Sanatorium.—Res. Asst. M.O. £300.
Birkenhead General Hospital.—Hon. Asst. Surgeon.
Birmingham and Midland Eye Hospital, Church-street.—H.S. £110.
Bradford, Royal Eye and Ear Hospital.—Jun. H.S. £150
Bristol, City and County of.—Asst. M.O.H. £500.
Bristol General Hospital.—Hon. Obstet. Phys. and Gynæcologist, Hon. Asst. Obstet. Phys. and Gynæcologist; also Hon. Surg. and Hon. Asst. Surg.
Burnley, Victoria Hospital.—H.P. At rate of £150.
Camberwell House, London, S.E.—Third Asst. M.O. £300.
Cancer Hospital, Fulham-road, S.W.—H.S. At rate of £100.
Carlisle, Cumberland Infirmary.—Second H.S. £155.
Chelsea Hospital for Women, Arthur-street, S.W.—Jun. H.S. At rate of £100.
Chesterfield and North Derbyshire Royal Hospital.—H.S. £150.
City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—H.P. At rate of £100.
Colchester, Essex County Hospital.—Asst. H.S. £120.
Coventry and Warwickshire Hospital.—Res. Cas. O. £125.
Derby, Derbyshire Royal Infirmary.—H.S. for General Surgery. £150.
Dewsbury and District General Infirmary.—Second H.S. £150.
Doncaster Royal Infirmary.—H.S. and Cas. H.S. Each at rate of £175.
Durham County Council.—Asst. Welfare M.O. £500.
Durham University College of Medicine, Newcastle-upon-Tyne.—Professorship of Bacteriology. £1000.
East Ham County Borough.—Asst. M.O. £500.
East Ham Memorial Hospital, Shrewsbury-road, E.—Res. M.O. At rate of £200.
Elizabeth Garrett Anderson Hospital, Euston-road, N.W.—H.P., Obstetric Asst. Also three H.S.'s. Each at rate of £50.
Galway, University College.—Professorship of Medicine. £336-£350.
General Lying-in Hospital, York-road, Lambeth, S.E.—Jun. Res. M.O. and Anæsthetist. At rate of £100.
Glasgow, West of Scotland Neuro-Psychiatric Research Institute.—Director. £850.
Gloucester, Gloucestershire Royal Infirmary, &c.—Asst. Surgeon.
Golden-square Throat, Nose, and Ear Hospital, W.—H.S. £100.
Halifax, St. Luke's Hospital.—Jun. Res. M.O. £250.
Hospital for Sick Children, Great Ormond-street, W.C.—Part-time Jun. Cas. O. At rate of £150. Also H.P. and H.S. Each at rate of £100.
Ilford, King George Hospital.—H.S. At rate of £100.
Indian State Railways.—District M.O. Rs.650 per mensem.
Ipswich, East Suffolk and Ipswich Hospital.—H.S. £120. Also Res. M.O. £350.
Kingston-upon-Hull, Hull Municipal Maternity Home and Infants Hospital.—Jun. Res. M.O. At rate of £100.
Liphook, Hants, King George's Sanatorium for Sailors.—Asst. M.O. At rate of £200.
L.C.C.—Temporary Asst. Organisers. 66s. 6d. each a week.
L.C.C. District 11, Area IX., Deptford.—Temp. District M.O. £210.
London Jewish Hospital, Stepney Green, E.—Clin. Asst.
Manchester.—Asst. M.O. for Crossley Sanatorium, Delamere Forest, Cheshire. £200.
Manchester and District Radium Institute.—Asst. M.O. £500. Also Clin. Asst. £250.
Manchester Hospital for Consumption and Diseases of the Throat and Chest.—Hon. Physician.
Middlesex County Council.—Dist. M.O. for Harmondsworth &c.—£97-£100. Also Public Vaccinator.
Miller General Hospital, Greenwich-road, S.E.—Cas. O. At rate of £150. Also H.S. and H.P. Each at rate of £100.
National Hospital, Queen-square, W.C.—Asst. Pathologist. £250.
Newark General Hospital.—Res. H.S. £175.
Newcastle-upon-Tyne, Royal Victoria Infirmary.—Med. Regs. Each £250.
Nottingham General Hospital.—Res. Cas. O. At rate of £200.
Oldham Royal Infirmary.—H.S. At rate of £175.
Plymouth Central Hospital.—Res. H.S. At rate of £150.
Princess Louise Kensington Hospital for Children, St. Quentin-avenue, North Kensington, W.—H.S. At rate of £75.
Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Asst. Res. M.O. At rate of £80.
Queen Mary's Hospital for the East End, E.—Res. M.O. At rate of £200. Also Cas. O., H.P.'s and H.S.'s. At rate of £150 and £120 respectively.
Richmond Borough (Surrey).—M.O. to Antenatal Clinic. £1 11s. 6d. per session.
Royal Chest Hospital, City-road, E.C.—Med. Regs. £50.
Royal Free Hospital, Gray's Inn-road, W.C.—Cas. O. At rate of £150. Also H.S.'s, H.P.'s, &c. All at rate of £100. Also H.P. to Children's Dept.
Royal London Ophthalmic Hospital, City-road, E.C.—Five Out-Patients Officers. Each £100.
Salford, City.—Jun. Asst. for Venereal Diseases Treatment Centre. At rate of £500.
St. John's Hospital for Diseases of the Skin, 49, Leicester-square W.C.—In-patient Med. Reg. £50.
St. Mark's Hospital for Cancer, &c., City-road, E.C.—Res. Surg. O. At rate of £150.
St. Stephen's Hospital, Fulham-road, S.W.—Clin. Asst. At rate of £100.
St. Thomas's Hospital.—Physician for Skin Dept.
Samaritan Free Hospital for Women, Marylebone-road.—Hon. Surg. to Out-patients.
Truro, Royal Cornwall Infirmary.—H.S. £170.
University College Hospital, Gower-street, W.C.—Hon. Asst. P.
Victoria Hospital for Children, Tite-street, Chelsea, S.W.—Surg to Ear, Nose, and Throat Dept.
Warrington Infirmary and Dispensary.—Jun. H.S. £175.
West End Hospital for Nervous Diseases, Welbeck-street, W.—Hon. Anæsthetist.
Weston-super-Mare, General Hospital.—Res. H.S. £150.
Willesden General Hospital, N.W.—Clin. Assts. for Out-patient Department.
Wolverhampton Royal Hospital.—H.S. At rate of £100.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Middleton (Lancaster); Talybont (Cardigan); and at Droitwich (Worcester).

Births, Marriages, and Deaths

BIRTHS.

FARQUHARSON.—On May 11th, at Breda, Severn-avenue, Weston-super-Mare, the wife of Dr. J. L. Farquharson, of a daughter.
LYONS.—On May 15th, at 12, The Avenue, Lincoln, to Dorothy, the wife of J. Lyons, M.D., F.R.C.S.—a daughter.
WARD.—On May 10th, at Deepdene, Cheadle Hulme, Cheshire, the wife of John Forbes Ward, M.D., of a daughter.

MARRIAGES.

SELLORS—CHESSHIRE.—On May 11th, in London, Thomas Holmes Sellors, M.Ch., F.R.C.S., of Gordon-mansions, Francis-street, W.C., to Dorothy Elizabeth, eldest daughter of Mr. and Mrs. John Chesshire, formerly of Worcestershire.

DEATHS.

BLACKBURN.—On May 11th, William Howard Blackburn, M.A., M.B., B.Ch., D.P.H., M.R.C.S., M.O.H.
HULL.—On May 12th, as the result of an accident, at Beaufort Lodge, Streatham Common, Edward Gordon Hull, M.A., M.D., D.S.M.
PAXON.—On May 7th, at Eastern Fever Hospital, Homerton, Valentine Preston Paxon, B.A., B.Ch., aged 28.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

THE VIRUS OF POLIOMYELITIS.

A LEADING article in our issue of April 16th summarised some recent advances in the identification of filtrable viruses with elementary bodies visible under the microscope. Work along these lines has lately given fairly definite results in relation to poliomyelitis, and goes far to confirm the findings of Flexner and Noguchi 20 years ago. From cases of poliomyelitis these investigators grew cultures of what they described as "globoid bodies." Since then, however, similar appearances have been described in several different diseases and some of them have been shown to be artefacts. The importance of Flexner and Noguchi's observations has therefore been doubted, but they are brought back into prominence by the experiments of P. H. Long, P. K. Olitsky, and C. P. Rhoads [1] at the Rockefeller Institute, New York.

The globoid bodies were described by Noguchi and Flexner as minute formed structures cultivated either from unfiltered emulsions of the nervous tissues or from the filtrate after passage through a Berkefeld candle.

The culture medium consisted essentially of human ascitic fluid to which had been added a fragment of sterile, fresh tissue, usually rabbit's kidney. The liquid was covered with a deep layer of sterile paraffin and incubated at 37° C. After five days an opalescence appeared about the fragments of tissue and after a further three to five days it extended into the upper portion of the medium. After 10 to 12 days the haziness began to diminish and irregular particles were formed which slowly fell to the bottom of the tube.

To demonstrate colony formation by the "bodies" a semi-solid medium was used, consisting of ascitic fluid and kidney with sufficient 2 per cent. agar to produce a solid mixture. This medium was not successful for initial growths, but transfer could be effected to it after about the third generation of growth in the fluid medium. In this medium minute colonies formed about the tissue fragments. It was shown that neither the ascitic fluid nor the kidney was essential for the formation of globoid bodies, and although media from which both of these tissues were absent were inferior to the mixtures containing them, it was apparent that the growth was not derived from the kidney tissue or ascitic fluid, but primarily from the inoculum.

The globoid bodies were minute globular structures 0·15–0·3μ in diameter and arranged in pairs, chains, or small masses according to the nature of the medium; in earlier generations the bodies stained feebly with Gram's stain, but in other cultures more intensely. It seemed that considering their property of forming definite colonies and their distinctive morphology these bodies were entitled to be regarded as organisms.

Flexner and Noguchi found that only exceptional cultures were pathogenic when injected intracerebrally into monkeys.

Two sets of inoculation experiments were, however, reported, one with globoid bodies derived from human cases, and the other with those derived from the M.A. virus already propagated in a long series of monkeys. With the human strain the third sub-plant (third generation) of the "organisms" proved fatal to monkeys; the animals developed poliomyelitis and from their nervous systems globoid bodies were in turn cultivated. With the monkey strain the third, fifth, and sixth generations produced positive results. In addition, a monkey was inoculated with a mixed culture representing the eighteenth and twentieth generations and, although it died from an intercurrent infection, from its central nervous system, after death a filtrate was obtained which gave rise to typical experimental poliomyelitis in another monkey.

Subsequently, Flexner, Noguchi, and Amoss obtained what they regarded as "mass" cultures of globoid bodies and proved that they were infective and that globoid bodies could be cultivated again from the nervous system of the animals dying of poliomyelitis after the inoculation. It was shown that globoid bodies kept in the semi-solid medium at room temperature were still pathogenic for the monkey 19 months after their isolation. In the ice-box too, as Amoss afterwards showed, they could survive several months. Strict anaerobiosis was essential.

Long, Olitsky, and Rhoads, in their repetition of this work, inoculated about 50 tubes of medium during each attempt at cultivation. They used virus from the brains of seven monkeys. After 10 to 14 days each tube was examined; any that showed contamination with known bacteria was discarded, any that showed material resembling globoid bodies was sub-planted to six or eight tubes of Noguchi's fluid medium. Controls were kept at all stages. The opalescence described by Flexner and Noguchi was not detected, but out of 315 tubes originally inoculated, 36 showed minute bodies suggesting micro-organisms; such apparent growths were obtained from all seven monkeys, but those from three failed after the first sub-planting; the others showed successive "growths" up to the third, fourth, eighth, and eleventh sub-planting, respectively.

In early sub-plants the bodies were single, in pairs, or in short chains, and the individual bodies had a fairly uniform appearance. In older sub-plants the bodies were more numerous and in part formed agglomerated masses. They stained well with alkaline methylene-blue, but not, as a rule, with Gram's stain. It is important to note that in almost all film preparations from sub-plants kidney tissue-cells and leucocytes were observed.

The cultures of the successive sub-plants were pathogenic for monkeys; the animals developed typical experimental poliomyelitis and after their death, inoculation of material from their nervous systems into other monkeys reproduced the disease. Furthermore, in every case except one, globoid bodies were again cultivated from the nervous tissues of the monkeys after death. Such results were obtained with the sixth, seventh, eighth, ninth, and tenth sub-plants from one of the original cultures. The seventh transfer represents a dilution of the original material of about $1{\cdot}5 \times 10^{13}$ and the tenth of about $1{\cdot}3 \times 10^{15}$. Flexner and Noguchi had calculated that without reproduction of the virus by growth, the limit beyond which the mixture would not be infective was represented by the second transfer of the original virus in the culture medium.

It was found that tubes which did not show the appearance of "globoid bodies" were not infective. Thus, material from four such tubes of the ninth transfer, and again from five such tubes of the tenth transfer failed to produce any disease when inoculated into monkeys in the usual way, although as has been said, "positive" tubes of the same generation had been found to be actively pathogenic.

As regards colony growth, Flexner and Noguchi's special semi-solid medium was not used, but on rabbit-blood-dextrose-agar plates incubated anaerobically, no colonies were detected. "Mass" cultivation was also unsuccessful.

From their study of these minute bodies Long, Olitsky, and Rhoads were not convinced that they were dealing with cultures of the actual "globoid bodies" or indeed of any living micro-organism. Nevertheless, the inoculation experiments left no doubt that the poliomyelitic virus had multiplied in the culture tubes and they believe that it increased as a consequence of being in a medium of modified tissue-cell culture; for in almost all specimens many well-preserved kidney tissue-cells and leucocytes were observed, the latter being probably derived from the ascitic fluid. Since only those tubes which showed the appearance of globoid bodies were infective, it may be that the virus is adsorbed to these bodies; but no suggestion is offered as to the derivation of the globoid bodies themselves.

Since the publication of this work it has been announced (*Times*, Jan. 2nd, 1932) that Prof. F. Eberson, of San Francisco, has succeeded in isolating the causal organism of poliomyelitis, which is stated to become visible only after several weeks' cultivation.

[1] Jour. Exper. Med., 1930, lii., 361.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.—Special post-graduate facilities are offered at the Royal Maternity and Women's Hospital during August and September. Particulars may be had from the house superintendent of the hospital, Rottenrow, Glasgow.

A SUPRAPUBIC CATHETER AND ITS MANAGEMENT.

IN 1923 a business man, aged 69, underwent suprapubic cystotomy because of simple enlargement of the prostate. Thereafter, until his death in March, 1931, urine was passed solely through the cystotomy opening, and a number of methods were used to secure comfort and freedom from leakage.

His widow informs us that for the first 15 months after the operation success in these objects was not attained, although no limit was put to expenditure or scope of inquiry. Self-retaining catheters, it was found, were apt to give pain in insertion and withdrawal, and they "may cause serious trouble if important parts of the head perish and give way. Straight catheters are liable to leak, and rarely proved reliable for all positions of the body." Progressive increase in their size proved necessary, and their use was therefore abandoned.

Numerous firms were consulted and offered ingenious devices for absorbing, detaining, or directing leakage

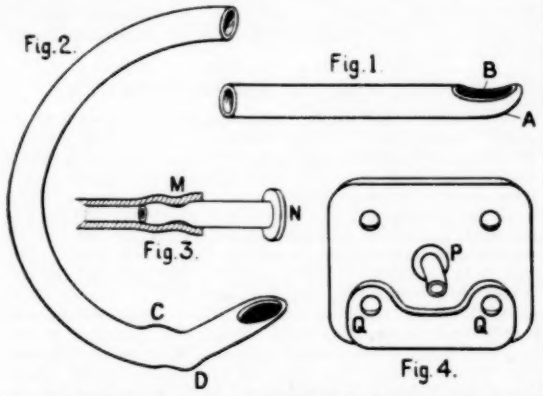


FIG. 1.—Termination of a straight catheter, showing spoon-shaped outer surface and long aperture (¼ in.).
FIG. 2.—Catheter prepared for use, showing curve and bulges. C, Decided bulge on inner side of curve. D, Slight bulge on outer side of curve.
FIG. 3.—Hollow bottle-shaped glass stopper: M, open end entering catheter; N, closed end.
FIG. 4.—Bone gadget laid over lower part of rubber shield, shaped bone 1/16 in. thick, with two holes fitting over studs at Q. P is place of emergence of catheter.

as it occurred. It was felt, however, that the leakage must be stopped at the bladder end of the sinus, and this led the patient's wife to devise the method described below.

During 1925 and 1926, after its adoption, the patient missed only two days at business, living an ordinary active life from 10.30 A.M. to 9.15 P.M., and usually required no nursing attention during the day. No extra bed-linen or personal garments were needed. He was very well, put on weight, and was able to walk one and a half miles quite easily until late in 1929. On one occasion in 1926 he travelled from King's Cross to Leeds, inspected a large factory, and returned on the same day without undue fatigue. In January, 1928, there was serious leakage, but the same method was pursued successfully after advancing to catheter No. 23.

From this time on the method was not uniformly successful: there were occasional leakages. The patient was now very gradually losing ground, and the diminution of bladder capacity caused difficulty. Still success was often attained for weeks and months at a time, and extra bed-linen was rarely required until 1930. The patient was able to enjoy life, and spent several hours a day at business up to the end of 1929. In the last two months of his life there was leakage about one-third of the time, but the method was still largely successful. Dr. E. Collingwood Andrews states that until the last few weeks the urine remained acid and free from pus.

The apparatus used has the following features as stated by the designer:—

Special shaped ends.—Many straight catheters with side apertures have much superfluous rubber on the ends beyond the aperture. To avoid this spoon-shaped ends with slightly longer apertures were employed (Fig. 1). This made a great deal of difference to the patient's comfort, and lessened the likelihood of internal contact. As a result there was usually no trace of blood in the urine.

Elimination of leakage.—The straight catheter is a cylindrical body passing in use through an approximately cylindrical passage. Any straight cross-section of a cylinder is a circle, any slanting cross-section is an ellipse of greater area than the circle; therefore, if a cylindrical catheter be curved or bent and adjusted so that an elliptical cross-section occupies the bladder end of the sinus, leakage can be prevented. In the course of a handicraft method of curving the catheters certain bulges appeared incidentally which assisted to stop leakage. The curved catheter is illustrated in Fig. 2.

Device for adjustment.—It was found in practice that there was still a slight occasional oozing from the lower side of the circle of emergence of the catheter, due to some wobbling. This was corrected by strongly reinforcing the rubber tube part of the shield containing the catheter, and more especially by introducing a shaped bone gadget 1/16 in. thick laid on the lower part of the shield, as shown in Fig. 4. With these arrangements the patient was able to wear the same gauze dressings for 48 hours. The catheter was usually kept in for a fortnight, being changed in a regular routine every other Saturday night. Occasionally a very comfortable one was used a few days longer.

Leakage at special times.—Still there might be leakage at a bath time or any short period when the catheter was clipped up and the urinary bottle had been removed. Fig. 3 shows a device to prevent this, a hollow glass stopper placed in the catheter; the patient can see when it fills and evacuate, so that this type of leakage is not permitted. Analogous to this, not illustrated, is the suggestion of an extremely light temporary bottle, capacity half a pint only, for direct application to the catheter, for use in the late stages when the patient is often out of bed restlessly for short intervals. Another device which should be very useful in nursing these cases is a frictionised, powerfully elastic, ring-shaped band to secure the catheter at the outside point of entry to the rubber shield; this makes readjustments much easier and quicker than when sticky plaster is used.

NORWOOD SANATORIUM, LIMITED.

THE twenty-fifth report of the Rendlesham and Beckenham Branches of the Norwood Sanatorium opens with statistics showing that deductions are made upon a large basis. Over 7000 patients, being an average of 280 a year, are passed under review, 5983 males and 1061 females, the ages of the males varying from 20 to 72 and of the females from 25 to 76 years. Of these cases 1904 appeared to have an alcoholic heredity, 992 from paternal sources, 314 from maternal sources, and 898 from both parents. The patients have all belonged to the relatively upper strata of society in which, it would seem, the predisposition to indulgence may be definitely inherited, but in this connexion a comment, in the paragraph describing the occupation of the patients, is to the point. For it stands out clearly that those patients with little or no occupation, whatever their social status, are apt to fall victims of the habit. In women of all classes menstrual troubles, particularly dysmenorrhœa and depression associated with menopause are found definitely to lead to alcoholism. Commenting on the causation of other drug habits we have the satisfactory assertion that the operations of the Dangerous Drugs Acts have had a remarkable result in diminishing the number of cases of patients who have become addicts. The report closes with the satisfactory statement from the medical superintendents, that investigations are in progress to determine the fasting blood-sugar value in persons who have a craving for alcohol.

UNIVERSITIES YEAR BOOK 1932.

THE Year Book of the Universities of the Empire for 1932, which has just reached us, differs little from its predecessor except that it has 36 more pages and includes a short bibliography of the universities of this country, with particulars of holiday courses and exchange of students. Apart from this there is nothing new; but the alterations and corrections have brought the information scrupulously up to date and make it the useful and authoritative book which it is. There are now 70 British universities, excluding the Hebrew University in Jerusalem, the calendars of which we are told make up the enormous bulk of 50,000 pages, accessible hardly anywhere except at the Bureau of Information for the Universities of the Empire, under whose auspices this book is issued. Sir Frank Heath, in compiling the directory of university staffs and giving in a nutshell the essential information about degrees, diplomas, and scholarships, is laying under his debt not only the universities themselves but all those who are concerned with education. The bureau at 88a, Gower-street, London, is at the disposal of any university member from overseas who visits London. The Year Book is published by Messrs. G. Bell and Sons at 15*s*.

SALVARSAN JAUNDICE.

AMONG the possible causes of salvarsan jaundice are the action of the metal arsenic itself or the benzene radicle combined with it, errors in the manufacture of the drug, faulty preparation or inefficient technique at the time of injection, and the activation of some latent hepatic or alimentary infection. H. Ruge [1] concerns himself with this last aspect of the problem, and bases his conclusions on an experience of some 2500 cases of jaundice observed in the German Navy personnel at Kiel between 1919 and 1929. He observes firstly, that during the ten years before the war the incidence of salvarsan jaundice was 1 in 500, that of simple jaundice among the non-luetic cases about the same. During and after the war there was a notable rise in both types, and in fact of all types of icterus. This general rise in the incidence of jaundice was not confined to the naval depôt at Kiel, but was also observed in the German Army, in the civil population, and also in Sweden, Norway, and the United States. It therefore seems that the exigencies of military conditions and defective nutrition were not the probable causes. Further, the interesting observation has been made that even among the salvarsan injected cases the jaundice may appear in a number of men treated at the same time and in the same clinic. Such "minor epidemics" occurred among naval ratings afloat, where the conditions were favourable to exact observation. It was noted, for instance, that a sporadic case of salvarsan jaundice might be followed some three to five weeks later by a small group of similar cases among men undergoing a course of salvarsan injections. Such an incubation interval strongly suggested infection, and the suggestion was supported by the results of repeated blood counts which during the various phases of the illness closely resembled those encountered in infective conditions generally. This observation naturally led to a routine bacteriological investigation which was performed on numberless occasions. In only 3 per cent, however, was the result positive, the organism being *B. paratyphosus* B. The Widal blood reaction, on the other hand, was positive in a much higher percentage (figure not stated) for this organism. Ruge finally concludes that the actual cause of the jaundice in the two groups of cases (simple and salvarsan) is the same—namely, an organism of the typhoid-coli group. The higher percentage of case-incidences among the salvarsan-injected cases is explained by the added burden of syphilis and of the drug upon a liver which is already infected.

[1] Derm. Woch., 1932, xciv., 278.

A GENTEEL ADVERTISEMENT.

Dr. C. Willett Cunnington writes: THE LANCET does not usually publish advertisements of professional abortionists, but possibly you may make an exception of the following, partly because of its genteel phraseology, partly because the advertiser is presumably by now out of business. The date, as you will see, is 125 years ago. It is taken from *La Belle Assemblee*, or *Bell's Court and Fashionable Magazine*, of September, 1807.

"Lost Happiness Regained.—Any lady of respectability involved in distress from any expectation of inevitable dishonour, may obtain consolation and security and a real friend in the hour of anxiety and peril, by addressing a line (post-paid) to Mrs. Grimston, No. 18, Broad-street, Golden-square, when a private interview with the advertiser will be appointed. Ladies thus situated may depend on the strictest secrecy and motherly attention, combined with every comfort so necessary on those occasions for the restoration of that serenity of mind generally attendant on cultivated life."

This is the only advertisement of its kind which I have found in the ladies' magazines of that period. The delicate wording and the implication of its suggestive title would hold their own against any modern rival.

TWO USEFUL TIMEKEEPERS.

WE have examined two inexpensive watches of good appearance which may prove useful to the medical man both in private practice and for general use. The first is a 30-hour stop-watch with lever movement which is guaranteed for two years. The dial is graduated in one-fifth seconds, distinctly marked, and has a long second hand by means of which accurate pulse readings can be taken. The watch is made in a form suitable for placing on the consulting room table or for carrying in the pocket, as well as for wearing on the wrist; the prices are respectively 10*s*. 6*d*. and 15*s*. The second is an appointments alarm watch, also with lever movement and a bell inside the back of the case, which rings for some twenty seconds and can be easily set to "go off" at any time by moving a pointer to the hour required. A reminder can thus be obtained of an appointment or of anything which requires to be done at an approximately fixed time. This watch is guaranteed for three years and is sold at 25*s*.

The watches can be obtained from Messrs. Arnold and Co. of 122, St. John-street, Clerkenwell-road, London, E.C.

NIETZSCHE.

A POCKET edition of Nietzsche's famous prose poem, "Thus Spake Zarathustra," may find many readers in the medical profession. Speaking generally, the state in which much of the world is to-day was foreseen in this poem and in other works of the "mad" philosopher. To assert 100 years ago that the world required a change of heart because the code of morality formulated in Judæa 2000 years ago had proved entirely wrong, was to ask for a condemnation as an impious madman, and that was the treatment meted out to Nietzsche, who was certainly a difficult subject for classification. The world looks now at things differently, and the alteration of vision which commenced within the last hundred and fifty years, and became more noticeable in the middle of the last century, has been a much commoner property since the war, and it is striking to find that Nietzsche himself, just before his miserable end, wrote "I shall be understood after the next European war." This new version [1] of his greatest work is a revision of the well-known translation by Thomas Common, the editing having been undertaken by Dr. Oscar Levy and Mr. John L. Beevers, the former of whom is the editor of the authorised translation of Nietzsche's works.

[1] Thus Spake Zarathustra. By Friedrich Nietzsche. Translated by Thomas Common. Revised by Oscar Levy and John Beevers. London: George Allen and Unwin, Ltd. 1932. Pp. 364. 5*s*.